Contents for December 1961

SPECIAL LIVESTOCK HEALTH YEARBOOK

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IN THIS ISSUE —

What To Do Before The Vet Comes

Nothing hurts so much as paying a veterinary bill after the animal is dead. To avoid this double loss, learn all you can to assist your vet. He will appreciate it.

In this special issue, we supply a great deal of the kind of information we believe you need to help your veterinarian and to prevent disease losses. We have literally searched the world for information we think you can use. Be sure to read the slightly humorous article from England on page 9. If your big interest is cattle, don't miss the long article starting on page 59. The general article from South Africa on page 13 is a good one.

* * * * *

If you like Farmer's Digest, mention it to friends and neighbors.

THE FARMER'S DIGEST

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Farmer's Digest is probably the only farm magazine in the world published on the farm by farmers.

The Farmer's Digest

Volume 25 December 1961 Number 6

What's Your TLC Rating?*

***TLC stands for "Tender Loving Care," a treatment more important than you think for swine . . .**

Condensed from Missouri Ruralist
George L. Smith

TWO extra pigs in each litter and heavier weights at weaning time are the results of "tender loving care" combined with improved sanitation, cross-breeding and rigid selection of breeding stock at one of the state of Missouri's largest pork factories.

Dr. Harvey Helms, resident veterinarian at Trimble Manor, Trimble, Missouri, says improved management practices applied there are showing results. Equipped to farrow 100 sows a month and market 10,000 pigs a year, this hog farm, or any other as large, could easily encounter serious disease problems since the chance for disease increases as hog numbers go up. It follows that a sound sanitation program is a must.

A farmer farrowing only a few sows or a 4-H Club youngster with one gilt usually topped the big hog producer in litter size, weaning weights and disease control. Dr. Helms said there had to be a reason. It appeared to be TLC (tender loving care). Owners of small breeding herds are able to give sows and pigs more personalized attention than is sometimes possible on farms handling large numbers of swine. Dr. Helms has tried to provide that added bit of attention for Trimble Manor hogs. He admits it increases labor but gets results.

Purebred hogs of three breeds are raised at this Northwest Missouri farm—Hampshires, Landrace and Yorkshires. These breeds provide parent stock for a three-

Reprinted by permission from Missouri Ruralist, Fayette, Missouri

way cross resulting in heavier birth weights, heavier weaning weights and more pigs to the litter. Dr. Helms says hybrid vigor from cross-breeding, combined with rigid sanitation and careful selection of breeding stock has resulted in the production of some exceptionally good-doing pigs. Birth weights of three and one-half to four pounds are common. Crossbred pigs weighing forty pounds at seven weeks, that go on to tip the scales at 213 pounds in 146 days are not unusual, he says. Here's how it's done:

The three-way cross is achieved by breeding Landrace sows to Yorkshire boars. Though Dr. Helms has emphasized the cross-breeding program in recent months, it should be kept in mind that good purebred stock provide the foundation for this cross.

Sow Care

Sows are brought to the farrowing barn five to seven days before farrowing. They are driven into the wash rack from the hog wagon and are thoroughly washed and disinfected. Individual wooden farrowing crates also are cleaned and disinfected before being occupied. Dr. Helms prefers wooden crates since disinfectant soaks into wood and has a residual effect against bacteria. Three removable boards are rotated after each litter. The bottom board is placed on top giving the next litter a clean baseboard.

The sow's name, number, or identification is on a card attached to her crate. At the first feeding on entering the farrowing barn, sows are given two tablespoons of piperazine wormer. They are placed on full feed and bran is added to the ration to prevent constipation. Dr. Helms says this is especially important where sows are farrowing three-to-four-pound pigs.

Sows are given the same ration throughout their productive cycle, only the amount fed is varied. Dr. Helms explains that different rations were tried at various stages of the sow's cycle, but like dairy cows, a change of feed only resulted in a drop in milk flow.

Milk production on American dairy farms in 1960 averaged above 7,000 pounds per cow for the first time in history.

Sows are not fed for twenty-four hours after farrowing but are given one pound of feed the following day and rations are increased to full feed seven days after farrowing. An important part of the feeding program is regularity. The veterinarian says sows are creatures of habit and he insists they be fed at the same time each day.

During their stay in the farrowing barn, sows are turned out of their crates once a day, so the crates can be cleaned. Sows are let out two at a time but never

are allowed to come in contact with each other while on the exercise floor. They are washed and udders are disinfected before returning to their crates.

Shovels, boots and other equipment are disinfected in a strong dip after cleaning each crate or pen. Sow feeders and waterers are cleaned daily. Reason for this is to check the operation of waterers and to see that each sow is eating. A limited amount of bedding is placed in crates while sows are exercising and heat lamps are from the nursery to the feeding floor.

Pig Care

New born pigs are weighed at birth and weights are recorded. Needle teeth are clipped and pigs are given iron shots twenty-four hours after birth. Long navel cords are also clipped leaving two to three inches. Pigs are watched closely for signs of sneezing, coughing, scours or sickness. Any litter showing signs of an affliction is immediately isolated. In a sense, Dr. Helms culls the sow herd on the basis of survival of the fittest. Any sow that produces a litter of non-thrifty pigs is shipped. Her pigs are isolated and none are kept as herd replacements. Sows are culled on used to dry excessive damp spots.

The farrowing barn attendant always is present when sows are farrowing and Dr. Helms says this is perhaps as important as any other single management practice since sows, especially gilts, may have trouble farrowing large pigs.

As a final step in sanitation, unauthorized persons are not allowed in the farrowing barn or nursery. Those who enter must first step in a tray of strong disinfectant. There is no cross-traffic of personnel on the farm. The farrowing barn manager never sees pigs after they leave his care and the nursery attendant never sees them after they are moved the basis of disease resistance, rate of gain and feed conversion of their offspring.

Pigs are given access to clean creep feeders with small amounts of feed when four days old. Feed is added to creeps first thing each morning and evening An information card is attached to each pig that dies and a post-mortem examination is performed to determine cause of death.

One rat can destroy enough feed in one year to produce eight dozen eggs, five broilers or 10 pounds of pork. In addition, the pests kill small animals, start fires, spread disease, and scratch and gnaw property.

Nursery Management

Pigs are weaned at fourteen pounds rather than on an age basis. Dr. Helms explains that a fourteen pound pig, in good

health, is capable of consuming enough feed to maintain normal growth. He likes for pigs to meet the fourteen-pound mark at about two and one-half weeks of age. Those that meet this requirement are identified with a notch in the right ear. If they continue to do well, and reach forty pounds at seven weeks, they are again identified this time with a notch in the left ear.

Litters are penned separately in the nursery until seven weeks old. First culling of pigs is done at that time. Gilts bearing fourteen nipples are retained for a breeding herd, providing they meet weight and health requirements. Other pigs are grouped according to size and are moved to the feeding floor.

The original record card accompanies each litter during the stay in the nursery.

Recently a group of 286 pigs were weaned in twenty-one days at an average weight of twenty pounds. These were Landrace-Yorkshire first-cross pigs. Of this number there was only a 7 per cent total death loss and only a 3 per cent death loss after birth. Dr. Helm states that cross-breeding, improved sanitation and care in selecting breeding stock have increased the wean-off from seven to nine-plus pigs to the litter. He adds there never has been a case of scours, ever, under the new sanitation program.

As an added control against disease, the Trimble Manor show herd is kept isolated from all other swine on the farm. Also, any females purchased from off-the-farm sources farrow in isolation as a precaution against spreading disease.

Management practices at Trimble Manor are constantly changing on the basis of new developments from experimentation and testing on the farm. Some recent experiments conducted by the doctor include: A comparison of slatted floors with concrete floors; use of bedding vs. daily washdown of pens; control of pig scours; and confinement rearing.

Results of tests favor slatted floors. Hogs do better than when on concrete since wooden slats are cleaner.

To test confinement rearing, and to induce tail biting, the doctor placed an eleven pig litter in a small pen at weaning. They remained there until they reached market weight. Pigs were allowed less than four square feet each—that's wall to wall pork. This test litter did well and there was no tail biting.

Dr. Helms says, "Those things which work effectively on our hogs may not work for the next swine producer. We're looking for the most economical way to produce pork."

How To Avoid Breeding Failures

What are their causes, what can you do to correct them? . . .

Condensed from American Agriculturist

H. Joe Bearden, Cornell University

THE causes of breeding failures have been looked for by many people using different methods. A research team at Cornell University has studied over 100 herds that were experiencing breeding problems. The subject has been discussed with veterinarians and artificial insemination technicians.

Regardless of the approach, the answers are usually the same. The major causes of breeding failure fall into 3 categories. These are: (1) dairymen fail to use recommended management practices, (2) functional disturbances and (3) diseases.

Management Practices

Management was responsible for part of the breeding failure in 75% of the herds studied by the Cornell research team. Veterinarians invariably list it as the number 1 problem. The following practices are the ones most frequently neglected..

1. *Diagnosing heat.* All dairymen recognize the symptoms of heat when they see them. The problem arises when cows are not given the opportunity to show their symptoms of heat or when the dairyman doesn't take time to watch for them. For best results, all cows should be turned out in the morning for exercise and should be watched for ½ hour for symptoms of heat. With the use of a heat expectancy chart, the cows due in heat should be turned out and watched in the afternoon.

EFFECT OF TURNING OUT COWS ON THE PERCENTAGE NOT REBRED IN 60-90 DAYS

Practice	% Nonreturns
No turn out	64
Once a day turn out	69
Twice a day turn out	70

The conception rate is higher and an estimated 10-15% more heat periods will be seen when cows are turned out twice daily compared to no turnout.

2. *Breeding records.* Many dairymen only keep breeding dates for their cows and these probably would not be kept if the technician didn't record them on

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the stable breeding chart. Good records will include all dates such as heat, breeding, calving, dry and due. Veterinary treatments with dates and any other unusual occurrence should also be recorded. Good records help your veterinarian pinpoint causes of trouble when it occurs. Keep a stable breeding chart and a heat expectancy chart for the herd and a lifetime record on each individual cow.

3. *Pregnancy checks.* Some cows fail to come in heat following breeding even though they are not pregnant. Cows could be checked for pregnancy between 45 and 60 days after breeding. Those which are not pregnant can be treated and rebred. Research has revealed that each dollar spent for pregnancy checking will return $7 to $10 in milk production.

4. *Allow 60 days rest.* Cows bred earlier than 60 days after calving have a lower conception rate and a higher percentage of delayed returns.

The delayed returns are probably due to the egg being fertilized but dying at an early age. The cow then comes in heat 50 to 90 days later. Instead of gaining one heat period, conception may have been delayed 2 to 3 months.

5. *Veterinary help.* To be most effective the treatment for any ailment should be given early. Many dairymen wait until a cow is hopelessly sterile before calling the veterinarian and then lose confidence in him because he can't help the cow. The veterinarian should be called when cows:

a. Have abnormal discharges. (flaky or cloudy mucus from vulva).

b. Come in heat too often or stay in heat too long.

c. Fail to come in heat by 60 days after calving.

d. Have not conceived to 3 services.

All cows should be checked between 35 and 50 days after calving. This allows about 30 days

FERTILE COWS BRED AT VARYING INTERVALS OF TIME FOLLOWING CALVING

Days after Calving	Number of Cows	% Settled First Service	Service Required Per Conception
50 or less	26	31	2.5
51-60	24	67	1.7
*61-90	50	70	1.6
90 or More	50	76	1.5

* Recommended Time to Breed

for treating cows which have not recovered normally before it is time to breed them.

6. *Use healthy herd replacements.*

7. *Feed the herd adequately.* A mineral mixture offered free choice is helpful. A simple mixture of 100 pounds of dicalcium phosphate or steamed bone meal and 100 pounds of trace mineralized salt is adequate.

Functional Disturbances

1. *Cystic ovaries.* This condition occurs when a follicle (a blister like sack) becomes persistent on the ovary. This follicle contains the egg and normally breaks about 12 hours after the end of standing heat. Because it produces the hormone (estrogen) that causes heat, the cow remains in heat if it does not break. The cause of cystic ovaries is unknown. The cycle may be broken by treatment by a veterinarian. When the condition is recognized and treated early about 75% of the cows will recover.

2. *Absence of heat.* Several factors can prevent a cow from coming into heat.

a. Pregnancy. She should first be examined for this possibility.

b. Inactive ovaries. This condition is observed in heifers more frequently than in cows. It has been associated with underfeeding, especially in heifers, and can usually be corrected by feeding liberal amounts of grain. Deficiencies of trace minerals have also been suspected as a cause of inactive ovaries. The mineral mixture described earlier would correct such a deficiency.

c. Retained yellow bodies. A yellow body forms after each heat period but disappears if the cow is not bred or does not conceive. It remains during pregnancy but disappears shortly after calving. Occasionally, a yellow body will be retained beyond its normal time. If this occurs, the cow will not come in heat as long as it is present. Hormonal treatment by a veterinarian is usually required. The possibility of unobserved or "silent" heat periods should be checked before it is assumed that a cow has a retained yellow body.

He who never makes any mistakes also never makes any discoveries.

d. Cystic ovaries. About 10% of the cows with cystic ovaries fail to show any signs of heat rather than staying in heat too long. This may be caused by a growth of yellow body tissue around the follicles which counteracts the effects of the heat causing hormone.

Reproductive Diseases

A few years ago brucellosis was the number one disease affecting reproduction in cattle. Today, this disease causes very little trouble. The following diseases

are the ones which dairymen are concerned with today.

1. *Vibriosis.* This is a venereal disease which causes repeat breedings with heat periods occurring at irregular intervals (27 to 55 days or longer). A cloudy or flaky mucus discharge usually accompanies the disease. A tampon agglutination test is available for making a positive diagnosis. The best control measure is to breed artificially with antibiotic-treated semen.

2. *Trichomoniasis.* The symptoms of "Trich" are similar to those for vibriosis. Control the disease by breeding artificially with semen from clean bulls. Antibiotics will not kill the trichomonad organisms from infected bulls.

3. *Leptospirosis.* This is not a true reproductive disease although it does cause cows to abort if they are in the late stages of pregnancies at the onset of the disease. Other symptoms are: reduced milk production, loss of body weight, loss of appetite, a tinge of red in the urine and a high body temperature. A vaccine is available which gives protection for 9 months to one year. Vaccinate when:

a. An outbreak occurs in your herd.

b. An outbreak occurs in a neighboring herd.

c. New animals are being brought into your herd.

d. Animals are to be shown.

There are no doubt other causes of reproductive failure. However, if you will pay adequate attention to these causes your troubles will be minimized. An average of 1.5 services per conception and an average calving interval of 12 to 13 months are goals to strive for.

Baby Pigs Need Heat

A newborn pig has no thermostat control. If the pig is born in a cold house his body temperature essentially will follow the building temperature unless supplemental heat is supplied. One of the oldest and easiest ways to supply heat at farrowing is to use infrared heat lamps. Observing a few simple safety rules in the use of these lamps will keep down costs and insure safety.

Infrared lamps should always be used with porcelain sockets. The bulb base gets too hot for rubber, bakelite or brass with paper insulation. The lamps should be well supported, preferably on a chain, for easy height adjustment and rugged suspension. They should never be closer than 12 inches to the pigs.

—Farm News From Purdue

To-Morrow Is Too Late To Call Your Vet

Believe it or not, these tales by a British veterinarian are true . . .

Condensed from Farmer & Stock Breeder

TALK about a frustrating night! Just after 1:30 a.m., a client 'phoned "I've been out to a dance and just got back—can you come at once? I've got a cow calving!" I leapt out of bed, pulled my rags over my pajamas, and really sizzled the twelve miles to the farm. I burst into the cowshed and lo, the cow had calved!

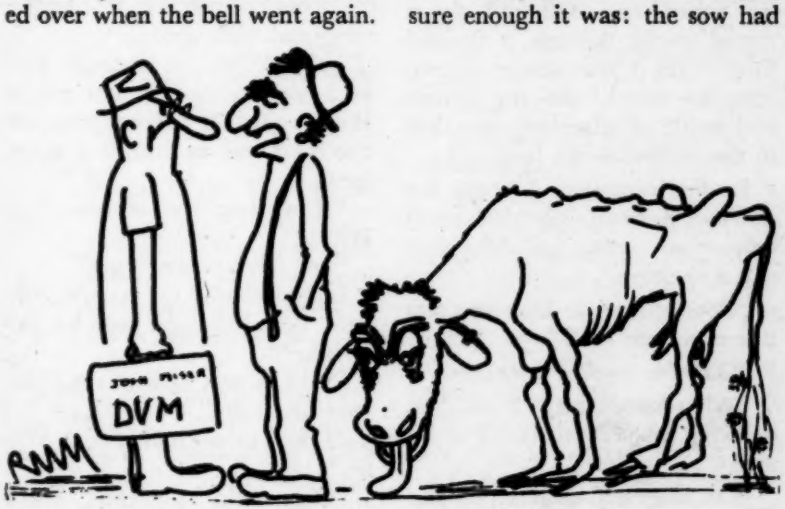
Twenty minutes later I sank gratefully in between the sheets and had just seemed to have turned over when the bell went again. I peered at the clock and the hands read 3:45 a.m. It was our prize panicker—

"Can ye come at once—I've got a sow farrowing?"

I poured once more into the garments and departed, not more than half a mile away from the last call.

The stench of the swill tubs hit me as I picked my way across the farrowing pen—I could hear the squawking of new-born pigs.

I thought "It can't be." But sure enough it was: the sow had



"And then, this morning, I suddenly noticed she didn't look so good."

By R. M. Miller, originally published in Modern Veterinary Practice

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popped out four of the most beautifully normal piglets I'd seen for some time.

Oh well—at least that's better than having to interfere and perhaps sit around for an hour, I thought, as I once more made a beeline for bed, licking my lips in anticipation of two and a half hours glorious overdue shuteye. But no such luck.

5:45 a.m. "Come straight away, I've got a cow dying." And when I got there, believe it or not, the cow was dead.

She was more than a mile from the buildings down the field, and we rolled and slithered down rutted tracks through a flooded ford, twice I was nearly thrown from my perch, and my syringe and bottle of stimulant were lost in the waters of the ford.

It didn't matter, I could see she was dead at least 100 yards before we pulled up. The cow was a skeleton.

"Good gracious—how long has this one been bad?"

"Oh—for over a year now."

"What symptoms," I ask, not knowing whether to laugh or be angry.

"Oh, she's had diarrhea on and off, but she has'na eaten much for this past month."

"How long's she been off her legs?"

"Oh, only this past week—I've been giving her stout and eggs and I've been up three times in the night to her."

"Well, what could I say? What peculiar trait in a man's character could make him neglect to send for a vet for a year, and at the same time nurse the skeleton like a baby throughout the last days of its existence.

Pound for pound, farm manure will benefit soil productivity more than any other soil amendment, say Florida soils specialists.

Does it make sense? It certainly doesn't, and yet it happens time and time again.

Take Willie, for example. Last back-end my partner saw one of Willie's cows. It had summer mastitis, and was as thin as a scarecrow.

"How long has it been dry, Willie?"

"Oh, about two years!"

Incredulously, my partner asked: "Why have you kept her dry so long?"

"Well, I was hoping she'd put some meat on."

"I doubt she's had it now, Willie."

"Oh, well," shrugged Willie philosophically, "at least the bones should make some good broth."

Then there was Len. Only the other day he 'phoned in a great panic. It was one of the worst

cases of pneumonia I had ever seen, and the heifer was literally suffocatiing; standing up, with her nose stuck out, pumping her chest desperately in an effort to get some oxygen into what was left of her lungs.

"Have you any idea of what the trouble is, Len?"

"What the devil do you think I sent for you for?"

I examined the lungs. As I thought, they were soggy and solid.

"It's bad, Len," I ventured.

"Well, you know me," said Len, almost cockily. "I never send for you chaps unless they are dead or dying."

"How long has this one been bad?"

"Oh, only about a couple of weeks!"

"I am afraid she is going to die."

"That's what I thought," said Len complacently, with an air of a man vindicated. "I just wanted to be sure before having her killed."

But he really was too late this time because almost before he had stopped speaking the heifer pitched forward on her nose, her chest gave one last desperate heave, her legs jerked convulsively, and within a few seconds she was as dead as a stone.

"Don't you thing it might have paid you to have sent for us a fortnight ago?"

"Oh, I don't know—never knew a vet cure one that bad afore!"

But perhaps for sheer inexplicable neglect old Frank beats the lot. Last year he lost 36 out of his 60 ewes before he decided to call me in.

It was early December and his fields were as bare as the top of his head.

"I suppose they are all in lamb?"

"Oh, aye," he said. "And what's more, Harry the knackerman tells me that most of the dead 'uns had two or three lambs inside them."

"Are you giving them anything to eat?"

"Sometimes."

"What do you give them?"

"Beet tops."

"Any concentrates?"

"No, but when I do feed them I give them plenty of beet tops."

"I think your trouble is starvation. How would you like to live on beet tops?"

"Oh, I reckon I could if I had to."

"You couldn't if you were pregnant."

"I never thought of it like that."

"Is this the thirty-second you've lost?"

"Doesn't it worry you?"

"Well, now that you mention it I am beginning to feel a bit guilty."

Dear old Frank! Even after I had outlined the feeding plan, I could tell he was still convinced that his sheep had been suffering from a mysterious disease.

But there's one thing about him, he has a wonderful sense of humor. He still tells the story of an assistant of mine who went to see one of his sows, a sow which even Frank admitted was as thin as a rake. My assistant, a blunt, aggressive Irishman, examined the scarecrow and pronounced his verdict and advice.

"Do you know what I'd do with it, Frank?"

"What?"

"I'd put a collar on and race it at the dog track!"

I suppose that just about sums up the worst of the incorrigibles. What can you do with them except give your sense of humor a free rein and accept the inescapable fact that none of them will ever become veterinary minded.

Cancer In Animals and Man Are Quite Similar

Cancer in animals is similar to cancer in human beings. Malignant tumors, or neoplasms, found in man and animal have a similar structure and behavior—they infiltrate surrounding normal tissue, destroy it and spread to other organs by blood or lymphatic vessels. Fortunately, these tumors are seldom transmitted from animal to animal or animal to man, according to Dr. A. M. Watrach, University of Illinois veterinarian.

The clinical signs are the same, Dr. Watrach said. There may be an ulcer that refuses to heal, an abnormal and chronic enlargement, a loss of weight. If one of these signs appears, the animal should be examined by a veterinarian at once.

"The greatest difference in cancer in people and animals is the frequency of certain kinds of cancer," Dr. Watrach explained. "For instance, fewer than 20 cases of stomach cancer in dogs are on record, but stomach cancer in people is quite common."

As with man, malignant tumors usually strike animals during middle and old age. Most dogs are over seven years old, and horses over 10. Pigs, cattle and sheep, which are usually slaughtered early in life, do not often become cancer victims.

University of Illinois veterinarians have been studying cancer cases sent to the state diagnostic laboratory. According to Dr. Watrach, 20 percent of all cases submitted to the laboratory last year were tumors. However, some of them were benign or localized tumors, which are not cancerous. *—University of Illinois*

Treating A Sick Animal

It is not enough merely to dose with medicines . .

Condensed from Farming In South Africa

Dr. J. F. W. Grosskopf,
Division of Veterinary Services, Onderstepoort

IT IS always advisable to consult a veterinarian when one of your animals is ill. However, there are times when a veterinarian isn't available. The farmer therefore, often has to treat his sick animals as best he can.

Unfortunately too many of us are inclined to be negligent when it comes to the care of a sick animal. We believe that the "patient" will soon recover if dosed with a variety of remedies. There are many diseases, however, against which the best remedies will be of no avail, unless accompanied by good care. As medicines only serve as aids in controlling disease, it is essential that the animal be kept in good condition and in suitable surroundings, so that it is better able to resist the disease.

Treatment

Sick animals should preferably be kept in a warm, clean and airy stable and be disturbed as little as possible.

Any exercise on the part of such animals should be restricted to a minimum. Do not allow them to straggle along behind the herd.

Isolate the sick animals from the rest so that they are disturbed as little as possible. If they suffer from an infectious disease, isolation will prevent the disease from spreading readily.

Sick animals should be provided with a thick, soft, dry bed of straw or sawdust.

Animals which are too weak to walk should be provided with the necessary shade, do not allow a sick animal to lie in the hot sun throughout the day during the summer months.

At night when the weather becomes cooler, the animal should be covered with a blanket of bags.

Ample clean water should be placed within easy reach of the sick animal. Mature cattle will

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Farming In South Africa, Department of Agriculture, Pretoria, South Africa

drink 10 gallons or more of water a day.

Try to keep flies away from the sick animal as far as possible. They are an unnecessary nuisance.

Animals unable to rise should be turned twice a day so that they lie on the other side. If they are allowed to lie in the same position for any length of time, decubital sores develop. Animals should never lie flat on their sides as they may become bloated and die. If necessary, the animal should be supported by means of bales of fodder or stuffed bags.

The animal should be allowed to eat as much as it wishes. Green fodder is usually best, provided it does not cause excessive purging. As green fodder, however, tends to wilt very quickly it is advisable to give it fresh three or four times a day. Animals such as dairy cows, which are accustomed to receiving meal may be given a small quantity two or three times daily. It is advisable to feed a mixture containing a large quantity of bran and to limit such a mixture to from 3 to 5 lb. daily.

Cows in milk should be milked dry even if they have very little milk while ill.

If the eyes are affected they will heal sooner if the animal is kept in a dark stable. Such an animal should in any case be kept out of the sunlight.

Never administer all sorts of remedies to a sick animal, either orally or by injection, unless you are quite sure what the animal is suffering from and then only the remedies recommended for that particular disease.

Constipation

Cattle are inclined to develop digestive disorders, especially if they have not fed for a day or two. The first organ to be affected is the rumen and soon after this constipation sets in, which is indicated either by the absence of dung or by the dry, hard droppings which may sometimes also be covered with slime. The rumen of a cow normally contracts about once every minute. By pressing ones fist into the left flank of the animal, these contractions can be felt. The fist is forced outwards once every minute. When the rumen is upset, these contractions occur less frequently or not at all.

Farming is the third most hazardous occupation in America in deaths per 100,000 workers. Mining and construction work rate first and second.

In such cases it becomes necessary to strengthen the organisms, enzymes, etc., in the stomach, which in turn serve as aids to the proper functioning of the rumen. An excellent mixture for this purpose is one bottle of vine-

gar and 3 lb. of sugar dissolved in water (the dosage for a grown animal). Using a bottle, administer the mixture carefully, and allow the animal to breath between swallows to prevent choking. Do not under any circumstances grip or pull the tongue and do not lift the head high.

Weed control is even more important in dry years than in wet years, to conserve moisture for crops.

Just turn the head slightly sideways so that the liquid does not spill from the mouth. After an interval of twelve hours, half a bottle of vinegar diluted with water may be administered, and this dosage should be repeated twelve hours later. Do not repeat the dosage of sugar as it may act as a laxative. Two bottles of molasses may be used instead of sugar. A yeast cake may also be given with the mixture. As soon as the rumen functions properly again, the constipated condition will right itself.

Great care should be exercised when dosing sick animals because they are often unable to swallow and therefore choke easily. Exercise special care when dosing with oily mixtures as they may very easily run down the windpipe with fatal results.

Diarrhea

In cases of excessive bowel action it is advisable to control the diarrhea since it enervates the animal and drains the body of large amounts of fluid. The desired results are not always obtained, but the following mixture can be tried: 2 parts of kaolin (a very pure white clay) to 1 part of tannic acid (by weight). The dosage for a grown animal is two heaped tablespoonfuls of the mixture shaken up in a small quantity of water, given three times a day for two or three days. For calves the dose is one dessertspoonful. Calves suffering from diarrhea should get less milk, but should still absorb their normal amount of liquid. A mixture consisting of equal parts of milk and lime water will serve the purpose. More milk may be added gradually until the calf gets pure milk again.

Knowledge comes by taking things apart, but wisdom comes by putting things together.

Anaemia

When an animal is extremely weak, especially when suffering from gallsickness and redwater, which cause anaemia, it may be dosed three or four times a day with a bottle of strong, black coffee (with a little chicory add-

ed). This serves as a heart stimulant.

If we devoted to our sick cattle the same attention we give to a sick member of our family — keeping them warm and comfortable and disturbing them as little as possible — far fewer animals would die than is the case at present.

Swine Influenza Weather

Warm days and cool nights—typical cornbelt autumn weather — increase the possibility of hogs becoming infected with influenza. Pigs weighing more than 75 pounds are most susceptible to the disease, which is caused by a virus.

Dr. K. M. Weinland, Purdue University veterinarian, advises farmers to provide hogs with clean, dry sleeping quarters free from drafts. Keep them away from dusty lots used for hogs a long time and from old straw piles.

Swine influenza virus is carried by lung worms which spend part of their lives in earthworms. These earthworms often inhabit old strawstacks. The disease, spreading rapidly through the air, often attacks hogs confined in winter quarters.

First symptoms of the disease are an odd sounding cough, loss of appetite and thumpy breathing. Except for the cough, Dr. Weinland explains, these also are signs of hog cholera and other diseases. So, the farmer should promptly call a veterinarian for an accurate diagnosis when he notices these signs.

Often swine influenza develops into pneumonia with its even larger economic loss to the farmer. Hogs being treated for influenza should be kept quiet and comfortable, have access to plenty of fresh water and placed on a light diet. If pneumonia does develop, then a veterinarian has to administer special treatment.

—*Purdue University*

A cattle disease that is only 10 years old in this country — rhino tracheitis or "red nose"—is spreading across all of North America and beginning to cut deeply into cattlemen's profits. The disease strikes both beef and dairy cattle during fall and winter, resulting in loss of weight and milk stoppage. The disease can be prevented by vaccination or successfully treated if caught in the early stages.

Prevent Baby Calf Diseases

Give your calves a good start in life. These suggestions are a good guide to follow . . .

Condensed from Farm Bureau Mirror

Dr. Samuel B. Guss, Pennsylvania State University

BABY calf diseases are becoming more prevalent as dairy herds increase in size.

A regular succession of baby calves born in the herd throughout the year contribute to the perpetuation of calf diseases. It is essential that dairy farmers understand how these diseases are perpetuated in order to be able to prevent or control them.

Colostrum or first milk contains proteins, sugars, and vitamins especially prepared for the newborn calf. Gamma globulin, the fraction of the dam's blood that contains disease protection antibodies, is released into the colostrum to protect the baby calf.

The calf is able to absorb this material only during the first 36 hours of his life, and this protection lasts for at least three or four weeks, depending on the degree of exposure to disease and the amount of stress suffered by the calf.

If exposure to disease is kept to a minimum, the calf can be brought through the critical first month of its life to the age where it will be able to produce its own antibodies against diseases. Chilling, over-eating, wet bedding, drafts, poor ventilation, and faulty diet are all stresses which contribute to breakdown of disease resistance.

First and most important of all sanitary considerations should be an effort to protect the calf from exposure to the manure or other body discharges of other calves or cows. These are the vehicles which carry diseases from calf to calf. If you cannot thoroughly clean and disinfect the boxstall where the calf is to be born, it would perhaps be better to allow the cow to have it in her own stall. In the summer time it is desirable to let cows calve in a clean shady lot.

Calf pens which cannot be cleaned absolutely clean between calves are important sources of

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Pennsylvania Farm Bureau Cooperative Association, 3609 Derry Street, Harrisburg, Pennsylvania

infection. Some of the pens I see in dairy barns appear to be designed to make thorough cleaning impossible. Unless the calf pen can be cleaned thoroughly, it might be a waste of time to clean it at all. I prefer to start calves in tie-stalls raised off the floor to keep the calf clean and dry. Slatted wooden floors or wire mesh floors do this job well.

Calves should have their own grain box, hay rack, and water bucket so that the farmer can care for each one individually. Calves should be kept separated from each other during the time when there is danger that they might suck each other, and there should be no manure contamination of feed or water.

In my experience, severe calf scours or internal parasite problems are closely related to keeping calves in quarters where everything they eat or drink is contaminated with manure. Plans for good tie-stalls are available at county Agricultural Extension service offices.

Sulfa drugs, nitrofurans, and antibiotics are helpful both for preventing and treating baby calf infections. Your veterinarian can help you to develop for your calves a prevention or treatment program using one of the modern miracle drugs. The right medicine used in time usually will stop calf diseases rapidly and minimize loss of weight or stunted growth.

When these infections become chronic before medication is begun, treatment can be a waste of time and money. Too often farmers look for a miracle drug that will prevent every calf disease with one pill or shot. The drugs available today are truly miracle drugs if their use is combined with good sanitation, good nutrition, and good management.

No drugs will replace sensible sanitation, and sensible sanitation is possible only when stalls or pens are designed so that they can be kept clean easily. I have seen many elaborate expensive calf pens in which it was impossible to raise a good calf. When the conditions necessary for the development of calf diseases are understood, practical prevention is not difficult or expensive.

Farmers raise too many mediocre heifers which never reach their genetic potential because they get a poor start in life.

Did you know that the first American silo was built in Maryland in 1876? It is said that someone observed that cabbage fermented as sauerkraut kept well and thought that corn should be preserved for food in the same way.

Recognizing Skin Diseases In Hogs

Skin diseases cause heavy losses in swine and are often disregarded until it is too late . . .

Condensed from Wallaces Farmer

John B. Herrick, D.V.M.

A FEW years ago if hogs lost their hair and had a skin infection it was usually swine mange, and lime sulpher dips were used with fair results. New pesticides for the control of mange have lessened the incidence of this disease.

Despite the effectiveness and ease of application of these new drugs it is still not uncommon to see mangy hogs. In too many cases they are disregarded.

Fortunately, in recent years more interest has been shown in other swine diseases that affect the skin of the animal. Not all of the answers are available for the complete control of all swine skin diseases.

There are several skin diseases that require laboratory diagnosis for positive identification.

Parakeratosis

This condition affects pigs 10 to 12 weeks of age usually in the winter and gives a dry, thick, crusty appearance. Death loss is relatively low and the pigs appear to recover faster on pasture.

It appears that the cause of this condition is a calcium-phosphorus-zinc ratio that is off balance. Apparently an abundance of calcium interferes with zinc metabolism. Twelve pounds of calcium and 0.4 pounds of zinc sulphate per ton of feed is the desired amount.

Erysipelas

The skin type of erysipelas is sometimes observed in swine herds. Usually all layers of the skin are involved with a considerable amount of sloughing occurring. Erysipelas control by vaccination is recommended for afflicted pigs.

Photosensitization

Some pigs, particularly white colored ones, become sensitized to light following the ingestion of certain plants or substances. Ingestion of trefoil, certain clovers, green oats, phenothiazine, and probably other substances has resulted in swelling and itching of certain portions of the skin.

Reprinted by permission from Wallaces Farmer, 1912 Grand Avenue, Des Moines 5, Iowa

Removal of the animals from pastures or pasturing at night has usually relieved the condition.

Hives

Uniform, wheel-like lesions are sometimes noticed on the body surfaces and on the neck, eyelids, and legs of pigs. This is due to an allergy to certain substances, as observed in nettle rash, or reactions to certain biologics. These conditions readily disappear without treatment.

Greasy Pig Disease

This is an involvement of the skin of the entire hog's body, giving a wet, greasy appearance. It is an old disease but its occurrence has increased in recent years.

The exact cause is not known, altho some have attributed it to rich concentrates, poor management, bacterial or viral agents and allergic conditions.

None of these factors have proven to be the true cause of the disease. Usually pigs 25 to 35 days are affected, with mortality varying from 5 to 10 percent.

No specific cure is known altho certain treatment sometimes helps. Cleansing the pigs with pine oil or quaternary ammonia baths gives some relief.

Mange

Mange should never be ignored. Frequently swine producers neglect to treat for mange and the condition becomes a herd problem in a short time. Mange prevention should be a routine procedure in swine production.

Bacterial Infections

Frequently where filth and poor management prevail, young pigs may develop skin infections of bacterial origin. Postules usually accompany this condition.

There are several other conditions that will produce skin conditions in pigs, such as certain nutritional deficiencies.

Feeder calves can use a lot of pasture during the first fall. A good feed for use on pasture consists of 1,000 pounds of ground cobs, 500 pounds ground ear corn, and 200 pounds of good protein supplement.

In all cases a diagnosis should be obtained because it is not uncommon to observe a herd of hogs being treated for one skin condition when another exists that is being aggravated by mistreatment.

This is the case particularly with parakeratosis, mange, and greasy pig disease. Only recently a group of young pigs were suffering from a skin condition produced by excessive amount of lime and dry dip in the bedding which was used to cover up filth. This condition was being aggra-

vated by repeated treatment for mange. Thus, in many cases a diagnosis is needed before proper treatment can be initiated.

Leptospirosis May Come From Polluted Stream

Many cases of leptospirosis have been traced to a polluted stream, says Dr. L. E. Hanson of the University of Illinois.

Leptospirosis is a disease that causes considerable losses in swine, cattle and sheep in the United States. These losses are the result of reduced gains and milk production, abortions and death.

A major reservoir host in most localities appears to be swine. Infected swine excrete the organism in their urine, contaminating puddles and streams. Cattle and swine that have access to these streams may become infected by drinking and wading in the water.

Live organisms have been detected in the urine of some swine up to one year after the initial infection. Organisms are shed in the urine of other animals and man, but seldom if ever for such an extended period. Leptospira have been isolated from cattle as long as four months after the first illness.

Although leptospira germs are easily destroyed by sunlight, high temperature, drying and common disinfectants, they can live for considerable periods of time in puddles and slow-moving streams.

When there are signs that the disease has attacked an animal or herd, no time should be lost in calling a veterinarian, says Dr. Hanson. But it is better to prevent leptospirosis through careful management procedures than to try to treat it after the disease has become established.

If special attention is given to avoiding contacts with infected animals or waste, many outbreaks can be avoided. Both cattle and swine should be blood-tested for leptospirosis. Only animals from herds with negative leptospirosis tests should be considered for herd additions, advises Dr. Hanson. —*The Berkshire News*

About the first step in a profitable swine project is to get sows properly settled. If we can get the exact number of sows we plan to breed farrowed, we think we have done quite a job — though we don't always get the job done. Some things that help are careful observation and handling of sows, judicious use of boars and proper care of the sow during gestation. Another practice which seems to help is breeding each sow to two boars, when it's possible to do so.

Abnormalities In Cattle

Has an abnormal calf ever puzzled you? This article tells why they occur . . .

Condensed from The Ayrshire Digest
L. O. Gilmore and *N. S. Fechheimer,*
Ohio Agricultural Experiment Station

NO COW is all bad. Neither is any cow perfect despite the over use of printers ink sometimes to make it appear thus.

All traits possessed by an animal are affected by the genes it receives from both parents as well as the environment in which the gene composite is allowed to be expressed. The genes are the units of inheritance and are transmitted in groups making up chromosomes. While they come almost equally from both parents it does not follow that each grandparent necessarily contributes one-fourth of the inheritance received by any one calf.

The calf not only receives half from each parent but each half has genes (or chromosomes) that have pair mates in the other half. For any one pair of genes, therefore, the calf receives one from each parent, each of which had come respectively from a different grandparent. These two will represent one of the two maternal grandparents and one of the two paternal grandparents. This illustrates in a simple way why both sides of a pedigree merit equal consideration in its evaluation. Because of the chance of a particular contribution per individual decreasing with each ancestral generation, the main emphasis should be reserved for the close ancestors. The basic problem is one of looking for evidence of particular genes being present in the cattle of each generation. All genes forming the gene complex known as a parent, plus those in potential parents, constitutes the gene pool of a breed. Much remains to be learned about the way in which they act and interact to influence cattle to perform as we witness. Some combinations for example are good, others are less so.

The most important consideration regarding the occurrence of abnormalities in livestock is recognizing the reality of the situation. For breeders to recognize the occurrence of inherited lethal conditions such as congenital dropsy or a skin defect known to

Reprinted by permission from The Ayrshire Digest, Brandon, Vermont

have occurred during the recent past in this country and abroad is merely to admit that the causative genes are part of the breed pool of inheritance. Many undesirable genes are known to occur in all breeds of cattle as well as in other mammals, including man. Those that by chance are associated with the most popular lines of cattle are the ones most likely to be troublesome within a breed. In desiring to breed from a certain line of popular cattle that carry such a gene, one coincidentally also is likely to use a succession of bulls that possess this undesirable gene. It has been established for British herds bothered by dropsy that an unusually high number of carrier bulls have been used. In such herds, the frequency of dropsical calves has gone up to 15-20% of all calves born. Few breeders can long stand the decreased efficiency that comes with a low calf crop.

The skin defect appearing in our cattle breeds causes no distress until after the calf is born. Calves afflicted with this problem may lack skin on certain areas such as the legs above the hooves, inside the nostrils and lining of the mouth. Without normal skin protection, the calf becomes infected with bacteria and dies of blood poisoning.

Congenital dropsy is also called edema, anasarca and bull dog (although the bones are not ordinarily affected as in true bull dog). Bull dog is not a proper term. Dropsy, edema and anasarca all refer to conditions of fluid in the tissue. Dams of affected calves are much larger than expected during the last two to three months of pregnancy. This is probably caused by the great accumulation of fluid in the uterus which can be palpated by ballottement from the region of the right flank. The cows may have trouble arising as calving time approaches. Calving may be difficult owing to the large size of the calf (up to 160 pounds). Caesarian section is often used to save the cow. The cow calves at normal time and the afterbirth is expelled normally.

Your town will be a delightful place to live in, if you are a delightful person to live beside.

The dropsical calf may be swollen over the whole body but the manifestations are extremely varied and sometimes the swelling is so mild that the condition may go undetected. If the head is highly swollen, the condition may remind the dairyman of the bull dog condition. The ears may be markedly enlarged. Occasionally the lobes are so enlarged that the ears hang down like a spaniel. When the head is that badly swollen, the legs usually are, too. When one presses his finger

against these swollen legs depressions or pits remain. If the afflicted calf is opened, the sac around the heart may have an excessive amount of fluid in it. The skin also may be thickened. When a dairyman fails to recognize these traits he may readily make matings that, otherwise in his wisdom, he might not make.

Inheritance

By the very nature of inherited abnormalities, some of which cause a calf to be born dead (lethal), or defective, these traits are not expressed until such a gene is paired, at fertilization, with another one like it. These recessive traits, as they are known, are caused by genes carried by both parents without obvious detection. In fact, they may have passed through several generations without being noticed. When a calf receives a gene for such a trait from each parent, the trait is expressed. Its appearance can be recognized and its prima facia importance can be assessed. In the case of either dropsy or the skin defect, the usual result is a dead calf either at birth or shortly after.

If a recessive trait is diagnosed, the frequency in the herd is an index of the severity of the problem in the herd, but the proportion of affected calves in the families or lines in which it appears is needed to obtain an idea of its mode of inheritance.

Two ratios are important in establishing the existence of a recessive trait. Carrier bulls mated to carrier cows produce three normal to one affected progeny if large enough numbers are observed. Because a dairyman is not likely to know all cows which are carriers he is more likely to encounter a seven to one ratio of normal to affected calves by a carrier bull out of dams that also are sired by a carrier bull.

Breed Program Is Needed

It becomes important to breeders, users of artificial insemination service and breed organizations to keep the level of undesirable recessive genes in the propagating stock of the breed rather low so that the chance of any two of them, that affect the same trait, coming together in a calf is likewise low.

The slaughtering of all known carriers is often first suggested as the best way of eliminating undesirable genes from a breeding stock. It would seem more realistic, however, including the economy involved, first to learn whether or not your herd has in it cows that carry an undesirable gene upon which you wish to concentrate attention. Only if it is found that you have more than a few such cows or have daughters of a known carrier bull, do you alert yourself to the possibilities

for further advance. Secondly, avoid the further use of bulls known to carry the undesirable gene in question. If the bull of your choice happens to be a son of a known carrier you would realize that there is one chance out of two that you have a carrier with which to deal. He is a suspect, therefore, because of the strong possibility (50-50 chance) of having received the gene from the parent.

The frequency of occurrence of an undesirable trait in a herd is not an indication of the cause. Only after proper reflection and consideration of the ratios given above can it be determined if a given trait is caused by a recessive gene. When this has been done, the sires and dams of all afflicted calves become implicated as carriers and it becomes important to learn as much as possible about future herd sires.

The easiest, clearest and in many respects the most satisfactory way to assure oneself of using a sire that probably does not carry the undesirable gene in question is to select a sire from a line that has no history of difficulty with the gene in question. Consultation with other breeders and inquiries to A.I. associations and your breed association are some suggested ways of investigating the history of a line relative to an undesirable gene.

In making these tests, another consideration must be made. Another aspect of a program is to provide for testing suspect bulls. After deciding which bulls are suspect, a breeder has to decide what level of certainty he wants from the results of his testing, i.e. how sure does he want to be that the bulls tested and which did not sire defective calves do not carry the undesirable gene. For example, if a bull is mated to 10-11 cows known to carry an undesirable recessive gene, and if none of the progeny show the trait, then it is known with reasonable probability (one chance in 20) the bull did not transmit the gene in question to any of the calves which might have received the gene from their dams. Breeding him to more such cows reduces the chance of an error being made but regardless of the number of cows to which he is mated, there always remains some chance (however slight) of concluding that a bull is not a carrier when in fact he is. On the other hand, only one afflicted calf, properly diagnosed, is sufficient to diagnose the sire as a

Abortions in cattle are most often infectious. Herdsmen should immediately show aborted calves to a veterinarian so cause of death can be determined.

carrier. The same degree of assurance is obtained by mating a suspect carrier to 20-25 daughters or half sisters of a known carrier bull. If a breeder wants to be more certain, he can possibly increase the number of matings. A program of breeding test bulls to some of the desired mates one year and the rest during the second year has some advantage. For those bulls which, by chance, sire affected calves from among the first few matings, the expense is reduced. Other developments in the ensuing calf crop help to evaluate the desirability of using a bull further. This delayed system would result in minimizing the chance of being wrong to only those bulls whose desirability remains high enough to make the further testing worthwhile. This applies only to those bulls who do not sire affected calves and whose chance of not having the undesirable gene has to be estimated.

By establishing a system of testing bulls, most of the carriers can be detected. The main emphasis in developing a breeding program can be placed on those tested and not proved to be carriers. The program that works when any one recessive gene is considered will work for other recessives as well.

Coffee Uses Lots Of Cream

Coffee often is considered a competitive drink by dairymen pushing the sale of milk, but actually large quantities of milk are used by coffee drinkers. A report by the Pan-American Coffee Bureau indicates 9.1 percent of the total milk production of the country is used as a creaming agent, the fourth largest use of dairy products. And 17 percent of all fluid milk products went into coffee in 1959, and the value of this milk was $462 million.

About two-thirds of the coffee drinkers in the United States use creaming agents in their beverage. In 1959, they consumed half a billion gallons in their coffee. Of the 63 percent of the people using creaming agents, 30 percent use milk, 23 percent light cream, 5 percent evaporated milk, 2 percent heavy cream, and a fraction of 1 percent powdered milk or cream.

More men use cream than women, younger people use more cream than older people, people are more likely to use cream at home than away from home, and Westerners are more likely to drink their coffee black. —*Kansas Farmer*

Raise Disease-Free Sheep

Give a spring drench, spray for external parasites and vaccinate against overeating . .

Condensed from Wisconsin Agriculturist

COLD winters usually make sheep pastures clean and worm free every year. Keep them that way by turning out only clean, worm-free ewes.

Two weeks before ewes and lambs go on spring pasture, give all ewes and rams one ounce of phenothiazine, suggests C. W. Burch, University of Wisconsin veterinarian.

You'll also need to supply plenty of pheno-salt mixture (1 pound phenothiazine powder to 10 pounds loose trace mineralized salt) fed free choice in a covered container.

If your ewe flock is drenched four times a year, you can leave the phenothiazine out of the salt during winter months. However, make sure that the loose trace mineralized salt is always available. Salt blocks shouldn't be used with sheep.

One precaution — although phenothiazine is not toxic, it's not advisable to drench ewes in the months immediately before lambing. If you use a pheno-salt mixture, drenching these pregnant ewes will not be necessary.

While drenching sheep correctly is a very easy task, there are two things you must remember:

Make sure the sheep swallows the full amount of solution. Learn to handle the drench without wasting it. Remember, a drench never killed a worm on the outside of a sheep.

Proper equipment, including panels or hurdles, makes the job much easier.

Contrary to what some shepherds think, it's not necessary to starve the sheep before drenching. If a tablet is given, use a balling gun.

When giving a liquid drench, always avoid getting even a drop of the drench in the windpipe. Pneumonia always develops in these mistreated sheep.

Also, avoid exciting or fighting the sheep. Back the animal into a corner, straddle and hold it securely.

Next, raise the sheep's head so the nose is level and insert the

Reprinted by permission from Wisconsin Agriculturist, Racine, Wisconsin

stem of the syringe back between the "grinders" and allow the sheep to chew on it.

At first, give only a small mouthful of drench. Usually the sheep will swallow it immediately.

Give the remainder of the drench as rapidly as the sheep will take it.

How many people from outside enter your sheep yard? You can avoid exposing your animals to diseases and parasites by limiting visitors.

Salesmen, rendering truck personnel, neighbors, or occasional visitors often carry bacteria on their clothing and footwear.

Disinfecting the visitors boots and shoes will help eliminate the problem. At the pen or barn entrance, keep a shallow metal vat containing a foam rubber pad that's immersed in a 5 percent creosol solution.

As the visitor steps on the rubber mat, he automatically disinfects the soles of his shoes. This way, bacteria picked up enroute and remaining in mud or manure will not spread infection.

At shearing time, helpers should be required to disinfect footwear and equipment before entering the pens. Thorough cleaning in a 5 percent creosol solution or other suitable disinfectant is recommended.

Spray to control external parasites (ticks, lice, mites) as soon as the ewes and rams are shorn. Or you can dust with 1½ percent rotenone powder.

Watch your flock for lameness when turning them out to pasture. Examine any questionable feet and trim any abnormalities.

Burch recommends vaccination of lambs three weeks before turning out to pasture to prevent over-eating disease, if this has not been done earlier.

Creep rations for lambs, if furnished, should contain antibiotics for growth promotion and to help prevent over-eating disease.

Make it a practice to clean and disinfect the sheep barn thoroughly at least once a year. Worm eggs often live stubbornly outside the sheep's body for a year or more.

Scabies of sheep has become more widespread in recent years. The disease is caused by mites; small parasites that pierce the skin to suck blood. Scabs are formed from the serum which escapes from the wounds. Great irritation is produced, which causes the animal to rub and scratch almost constantly. The loosened wool is rubbed off, and sheep become rough in appearance and fail to maintain their weight. Mites are spread from infected sheep to clean sheep from wool which has been rubbed off. Dips control scabies successfully.

About Necro In Swine

An old swine disease still gives trouble. Preventive measures in this article will help keep it out of your herd . . .

Condensed from Texas Farming and Citriculture

SALMONELLOSIS is just a new name for an old disease known as necrotic enteritis or "necro." The unfamiliar name is derived from the fact that the disease is caused by germs of the Salmonella species.

Attacks are made worse when affected swine are infested with roundworms, and outbreaks can evidently sometimes be "triggered" by the use of virus in vaccination against cholera.

Poor feeding practices, damp quarters, and filthy surroundings also encourage attacks and help spread the disease. This is because the germs are given off in manure, and clean animals are then infected through the eating and drinking of contaminated material.

Scouring and loss of weight may be noticed as early as two weeks of age, but symptoms usually appear suddenly in pigs weighing 40 to 50 pounds. Sucking pigs huddle together in the bedding, feel hot, refuse to eat or suck, but will often drink water. A severe watery diarrhea is usually an outstanding symptom, and the manure may contain shreds of tissue or clots of blood.

Older animals may appear perfectly normal outside of being affected with a diarrhea, but checking with a thermometer will often show some of them to be running temperatures up to 106 degrees. The temperatures may return to normal in a few days, but animals often remain as "poor doers" and continue to lose weight while literally "eating their heads off".

Many of these runty pigs develop a scurfy skin, and show evidence of pneumonia by coughing and rapid breathing. The disease may take either an acute course that causes many deaths or a chronic form that results in a few deaths but many unprofitable pigs.

A diagnosis is definitely made only through the elimination of diseases producing similar symptoms, some of which may exist in

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combination with necro in the same pigs. During the early stages an outbreak may resemble cholera, influenza, erysipelas, transmissable gastroenterities, and various other ailments.

No single treatment can be recommended, since this is dependent on existing conditions, locality, and pre-disposing causes. A diet consisting entirely of corn or oats will need to be supplemented with other feeds, and possibly with vitamins and minerals. The diarrhea will often be helped by the use of arsonilates, and particularly "hot" cases by sulfas and penicillin in combination with a ration containing a high level of antibiotics.

When swine are badly infested with worms, it will usually be advisable to worm them with one of the piperazine compounds before any kind of medical treatment is started.

Although many effective drugs are available for treatment nowadays, preventive measures are still the most practical means of controlling necro. Accordingly, most owners will save money by observing the following "don'ts:"

1. Don't feed an all-corn or all-grain diet.
2. Don't feed anything but a balanced ration.
3. Don't overlook the importance of free-choice salt and minerals.
4. Don't fail to provide fresh, clean drinking water.
5. Don't feed off contaminated ground.
6. Don't allow nursing sows to wallow in mudholes.
7. Don't keep pigs in filthy lots.
8. Don't fail to provide dry, clean quarters that are warm in winter and well-ventilated in summer.
9. Don't vaccinate pigs when they are in a run-down condition.
10. Don't forget to follow some kind of a program for controlling internal parasites.

Management Key To Dairy Success

On a modern dairy farm a profitable dairy herd must produce an annual average of over 6,500 pounds of milk per cow to pay its way, according to a University of Florida dairy specialist.

C. W. Reaves says some very efficient herds average as high as 10,000 pounds of milk per cow. He points out that modern dairy farming requires the best possible management practices, including adjusting production to seasonal market demands; efficient breeding; proper feeding and milking practices; top labor efficiency; cow comfort; and a balance between investment and income.

—Florida Extension Service

Cow Off Feed?
May Be 'Hardware Disease'

Here are five methods of treating an animal with metal in her stomach . . .

Condensed from The Farmer

A COW on your farm may have been acting strangely. She vomited at irregular intervals, generally soon after eating. She might go off feed for a few days, or she might keep right on eating as though nothing unusual had happened.

On another farm a cow was off feed and appeared to be constipated. Her milk production had dropped off to almost nothing, she acted droopy, and moved with a stiff gait.

Investigation revealed both those cows were suffering from "hardware disease." This is a common cattle ailment caused by metal objects being picked up with feed and swallowed. Being heavy, nails and pieces of wire settle to the bottom of the stomach, and aren't brought up when cud chewing starts. Instead, they are held in the honey-comb-like lining of the reticulum or second stomach.

Hardware may lie for a long time without doing any damage. Or, a sharp point may pierce the stomach wall at any time. Once an object has started through the stomach, it has a tendency to work deeper. According to its location and the direction in which it is pointed, hardware may pierce the heart or lungs after going through the diaphragm.

Symptoms and damage are largely dependent on the size of the penetrating object. A carpet tack or bit of fine wire will probably cause only a few days of vague symptoms before it is sealed off by scar tissue. At the other extreme, a large nail or staple is likely to cause serious damage.

The diagnosis of hardware disease often poses quite a problem, especially when the heart is not involved. In the early stages there is no certain way of telling it from an attack of indigestion. Under various circumstances, it

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can also be confused with other troubles like mastitis, kidney infection, acetonemia, displacement of the abomasum, inflammation of the uterus, or abscesses of the liver.

Once hardware disease has been definitely diagnosed, the owner has a choice of doing five things:

● *Standing the animal on an inclined platform* that keeps the front feet about six inches higher than the hind ones. The piercing object is thus kept pulled away from the diaphragm until the point can be sealed off with scar tissue. Such a platform can be built right in a cow's regular stall, and the animal must be kept on it night and day for at least six weeks. About 75% of the cases treated in this way will recover.

● *Removing the hardware* with an instrument consisting of a magnet and specially designed probang that permits dropping the magnet into the second stomach after it is passed down the esophagus. The magnet is then withdrawn with the troublesome metal adhering to it.

● Using an aluminum balling gun to *make cattle swallow strong 2 to 3-inch bar magnets.* A combination of magnetic attraction and stomach movements will often result in retraction of the penetrating objects. Once adherent to the magnet, they are not likely to pierce the stomach again.

● *Operating to remove the penetrating hardware* through the left flank.

● *Selling the animal* for beef.

Prevention is largely a matter of keeping metal objects out of feeds and pastures. In addition, magnets in the stomach have been advocated as a valuable preventive measure. These remain in the stomach permanently, attracting and holding bits of metal so they are unable to pierce the reticulum.

Dairy Cow Is Radioactivity "Strainer"

The dairy cow may provide mankind with its safest food in the event of heavy radioactive fallout, according to Calvin B. Reeves, Clemson extension dairy technologist.

Research by USDA at Beltsville, Maryland, shows that only 1 percent of the radioactive material present on grazing crops will show up in the milk. In addition, science has discovered a method whereby 98% of the remaining radioactive material in milk can be removed.

Reeves says science and mother nature working together may continue to provide mankind with his safest, and "most nearly perfect food" — milk. —*Clemson College*

FUN ON THE FARM

A Collection of Jokes and

Humorous Farm Stories

A veterinarian had tried for many years to figure out a way to collect long overdue accounts without coming right out and saying "pay or else." Finally he hit upon the following idea which is reported to have worked rather well. In letters which he sent out with requests for payment of accounts over six months old, he wrote:

"It has been said that a man who squeezes a dollar never squeezes his wife. In looking over your account, it has occurred to us that your wife is not getting the attention she deserves!" — *Holstein-Friesian World*

★ ★ ★

About the best thing you can save for your old age is yourself.

★ ★ ★

A race horse is an animal that can take several thousand people for a ride at the same time.

★ ★ ★

Two goats wandered into the alley behind a motion picture theatre looking for dinner. They found a can of film, which one of the goats devoured along with the can.

"How was it?" asked his companion.

"The book was better," he replied. —*Butter-Fat*

★ ★ ★

The Ten Commandments contain 297 words. The Declaration of Independence, 300 words. The famous Gettysburg Address, 266 words.

A government order recently to reduce the price of cabbage contained 279,999 words.
—*American Livestock Journal*

★ ★ ★

Men who found their way through the trackless wilderness now have great-grandsons who get lost in the supermarket.

★ ★ ★

An old farmer was moody regarding the ravages of the flood.

"Hiram, your pigs are all washed down the creek," a neighbor told him sympathetically.

"How about Flaherty's pigs?" asked the farmer.

"They're gone too."

"And Larsen's?"

"Yes."

"Humph," ejaculated the farmer, cheering up. "Ain't as bad

as I thought!" —*Arkansas Valley Journal*

★ ★ ★

COW'S LAMENT

The howling winds of winter came
The scattered grass was getting thin;
The farmer saw with troubled eyes
That bones were pushing through my skin.
He called the neighbors near and far
To find out what could ail me;
The things they brought to cure me
Made all my courage fail me.
They thought that I had hollow horns,
And sawed them off ,as you can see.
They said perhaps I'd lost my cud,
Which greatly puzzled me.
As I grew frail, they split my tail,
These sad, well meaning gents;
And at every turn I'd feel the burn
Of firey linaments.
They put on salves of every sort,
And ointments strong and smelly;
They just can't see what's killing me
Is just plain old hollow-belly!

—*Canadian Ayrshire Review*

★ ★ ★

Folks used to make their own clothes on a spinning wheel. Now they go to Las Vegas and lose their shirts on them.

A city boy was visiting a ranch in Wyoming on his first trip out West. He came to the ranch house with a handful of rattles from an enormous rattle-snake. When one of the ranch hands saw them he turned pale and said, "Golly, where did you get those things?"

The city boy couldn't understand why the ranch hand was so nervous, but explained, "I just took them off the biggest worm I ever saw!" —*The Farm Spokesman*

★ ★ ★

A kangaroo once went to a psychiatrist:

"What's wrong?" the doctor asked.

"I don't know," replied the kangaroo. "I just don't feel jumpy anymore." —*The Ohio Farmer*

★ ★ ★

Here are the 11 stages of man, in terms of dairy products:

1. Milk.
2. Milk and bread.
3. Milk, eggs, bread and spinach.
4. Bread and butter, all-day suckers, green apples.
5. Ice cream sodas and hot dogs.
6. Hamburgers, fried potatoes, coffee, apple pie.
7. Roast duck, creamed broccoli, fruit salad, demitasse.
8. Pate de foie gras, wiener schnitzel, Roquefort cheese.

9. Milk, toast, soft boiled eggs.
10. Crackers and milk.
11. Milk. —*The American Dairy Association*

★ ★ ★

These are the times you'll be bragging about some years from now as "the good old days". Better make the most of them now.

★ ★ ★

The little girl was alarmed by the furiously barking dog. "Does he bite?" she asked.

"Not if he knows you," assured the owner.

"My name is Mary Victoria Clements," she said, "Tell your dog, will you please?" —*The Wyoming Stockman-Farmer*

★ ★ ★

Definition: A pedestrian is a motorist who accidentally found parking space.

★ ★ ★

It was a hot day at the county fair. An elderly couple, she carrying a heavy lunch basket, were having difficulty wending their way through the pushing crowd. Suddenly he took over the basket.

"Thanks pa. It's burdensome," she said gratefully.

"I know, ma," he replied . . . "but there's always a chance of you gettin' lost." —*Michigan Farmer*

★ ★ ★

A woman is young until she takes more interest in the fit of her shoes than in the fit of her sweater.

My father was a cultured man. Every time he took me to the wood-shed he proposed a toast."

"Really? What was it?"

"Bottoms up." —*The Lion*

★ ★ ★

"What kind of dog you got there, kid?" asked a passerby regarding the nondescript mongrel romping on the lawn with a young lad.

"He's a German police dog." replied the youngster proudly.

"He surely doesn't look like one," the stranger objected.

"Course not," said the little fellow disdainfully, "He's in the secret service." —*Cowscope*

★ ★ ★

A youngster's definition of "nervous"; "I feel in a hurry all over, but I can't get started."

★ ★ ★

The health officer called up a farmer and told him he could take down the smallpox quarantine sign now that the children were all recovered.

"I don't want it down," the farmer replied. "Since you put the sign up, we haven't had a bill collector or salesman on the place." —*Wisconsin REA News*

★ ★ ★

A Scotsman wrote to the editor of a magazine as follows: "In a recent copy of your magazine you poked fun at the Scotch for being cheap. If it happens again, I will no longer borrow your magazine." —*Successful Farming*

There is the story about the farmer who was an incurable grumbler. One fall he had the best apple crop for miles around. One of his neighbors stopped by to congratulate him, and said, "Well, Hiram, you sure ought to be happy now. This is the finest crop of apples ever raised around these parts."

But the grumbler didn't even smile, as he growled, "Well, I s'pose they'll do—but where's the rotten ones for the hogs?" —*Sunshine Magazine*

★ ★ ★

An old timer is someone who can remember when you could promise a child the moon without having to buy him a space suit.

★ ★ ★

"I'm so old, I remember eating homemade bread," a fellow on the bus was bragging the other day. "That's nothing," said the man beside him, "I'm so old I remember breathing fresh air." —*New England Homestead*

★ ★ ★

Wife to husband on a dance floor: "Waltz a little faster, dear; this is a cha-cha."

★ ★ ★

A young lawyer had been retained by a farmer to prosecute a railroad for killing 24 hogs. He wanted to impress the jury with the magnitude of the injury.

"Twenty-four hogs, gentlemen, twenty-four! Twice as many as there are in the jury box." —*Mrs. Edward Schmalriede, in The Progressive Farmer*

★ ★ ★

Civic mindedness in another of its quieter aspects is to go on voting for new schoolhouses after your kids are grown. —*Milwaukee Journal*

★ ★ ★

A little girl in southern California was having her first glimpse of snow. "Oh, mother, what is it, what is it?" she shouted excitedly.

"Why, that is snow, Peggy. Whatever did you think it was?"

"Snow! Why, it looks like popped rain!" —*The Farmer*

★ ★ ★

One of our big problems today is that too many adults and not enough children believe in Santa Claus.

★ ★ ★

"What happened to that city feller you hired to help out on the farm?"

"Well, he used to be an automobile mechanic and he climbed the mule to see why she wouldn't go and she went."

Contributions for this page are welcome. Send your "Fun On The Farm" story to Farmer's Digest, Fort Atkinson, Wisconsin.

Maybe Your Cattle Have The "Gout"

Here's an interesting theory that says foot rot may be caused by diet rather than by disease organisms . . .

Condensed from Nebraska Farmer

DO YOUR cattle have the "gout?"

An interesting and novel theory has come along that says they may have. And if this unique idea holds any water at all, you may be treating them for something else entirely—costly and crippling foot rot.

Sound mysterious?

Well, some veterinarians have been taking a new look at this disease which cattlemen—dairymen and beef raisers alike—say is one of their biggest animal health problems.

They have come up with the tradition-rocking idea that foot rot in cattle may be caused by, or related to, circulatory troubles traced to diet or nutrition — much like gout affects humans. In comparing symptoms of the two illnesses, they have discovered some startling similarities.

So far anyway, the idea is strictly theoretical with no elaborate scientific data or concentrated checking or double-checking to prove it. It's controversial and fresh enough so that many won't subscribe to it at all, but it has caught the fancy of others—people who know cattle and their ailments.

Gout is traditionally the object of the time-worn joke and brings to mind the mental image of the overfed man confined to a chair with a badly swollen and heavily swathed foot propped on a stool in front of him. However comical it appears to others, gout is never funny to those suffering from it.

The disease comes and goes and is marked by painful swelling and inflammation of the joints. Any movement brings on intense throbbing pain. It is blamed on a diet with a heavy intake of too-rich foods or a sudden change from light foods to heavy foods.

This change in diet from light to heavy foods is what made cattlemen suspect that there might be some corresponding factors in foot rot. They noted that usually when outbreaks of foot rot appeared, a feed change occurred in the background — usually a switch to a richer, heavier diet.

Actually, modern veterinary science doesn't understand what causes foot rot. Wet weather, muddy feedlots, moist and un-

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sanitary conditions, uneven ground, rocks, pails, pieces of wire, viruses, disease organisms — all have been blamed, yet no sure-fire preventive has ever come about.

Most authorities agree that the outward infection and ugly growth which gives foot rot its name is caused by an organism — Spherophorus Necrophorus. They say this organism infects tiny breaks in the skin between the toes or around the coronary band.

Affected animals have a high body temperature, suffer from loss of condition, extreme pain, lameness, leg swelling, a drop in production of either milk or beef, become acutely ill and go off feed. Many different cures are tried, more often than not without success. However, excellent results have been reported from administering a massive shot of penicillin along with a heavy dose of sulfa drugs given orally.

Trimming away the affected tissue and applying medicines directly to the open sore is part of the standard treatment. If not treated, the affected foot may deteriorate and permanent lameness can result.

How Infection Starts

What causes those minute breaks in the skin around the hoofs of animals, allowing disease organisms to enter and start infection?

The gout theory doesn't dispute the fact that wet, muddy lots can soften feet so that they can be easily damaged by rocks, nails, wire or other junk left lying around. Keeping lots clear of rubbish, draining waterholes and using concrete aprons around feed bunks are management items recommended for preventing foot rot. How effective they are is unknown, but they are things that should be done anyway and will pay for themselves on their own merit.

Swine flue is most apt to occur in the fall and early winter months. First symptoms of the disease are a strange sounding cough, rapid or thumpy breathing and loss of appetite. It pays to provide hogs with clean, dry, draft-free sleeping quarters

The gout theory goes a step further and says the leg swelling and tiny fissures appearing in the skin around the feet may be the direct result of circulatory problems caused by nutrition. More than likely, the theory says, the condition is caused by a rich diet to which the animal's system is unable to adjust.

The other symptoms—acute illness, high temperature, extreme pain which throws the animal off feed—open the door to lowered resistance and infection from many kinds of germs and fungi

commonly found around livestock.

The Gout heory

Here are some logical sounding items which tend to substantiate the gout theory:

1—Foot rot can suddenly appear without warning in any class of cattle—young or old, beef or dairy.

2—Many cases of foot rot show up without any sign of injury or abrasion to the coronary band or the non-horny tissue between the claws of the foot.

3—Cases of foot rot persistently crop up in spite of the best management practices. Cases have been noted when cattle are moved onto meadows which haven't been pastured for 15 years. Other cases are reported when apparently healthy cattle are moved from the range to the feedlot.

4—The disease may occur any month of the year and under all possible conditions. However, it is somewhat seasonal, appearing more during the spring and fall—the times when most feed changes are likely to occur.

5—Treatment varies from area to area and herd to herd and is mostly on a trial and error basis. While a medication may appear to get rid of foot rot, there is a possibility that the animal's system may have simply adjusted to its new diet.

6—As in the case of gout, the fact that the foot—the part of the body farthest from the heart—is affected adds evidence to the belief that the disease is caused by poor circulation.

7—Rations have always been considered a very important part of the prevention process.

Taking that last item in account, veterinarians generally prescribe a carefully balanced diet with the right percentage of protein and carbohydrate and the correct amount of roughage. A good balanced mineral mixture must be supplied, they say, including adequate amounts of vitamin A, calcium and phosphorus. In some areas, trace minerals have some value. Some authorities feel that iodine compounds are valuable, but no reliable experimental data are available to confirm this.

How about antibiotics in the ration? There are antibiotics which will combat organisms associated with foot rot, and it is possible they may be effective when added to the feed. However, a sudden addition of antibiotic at high levels may disturb the microorganisms in the rumen and throw the cattle off feed.

There have been no tests to prove that there is a relationship between foot rot and the kind of feed an animal gets. But the feeling still persists in some quarters that a definite pattern links the two together.

Another piece of evidence seems to lay the blame on a feed change: purebred herds which normally have a low number of foot rot cases are consistently on a one-level heavy diet.

Why Contagious?

How about the apparent contagious factor of foot rot? Once the condition starts in a herd, it seems to hit many animals quickly. When the affected animals are isolated, it seems to clear up and stop spreading.

How can this relate to diet? For one thing, those cattle are probably all getting the same feed. When sick cattle are removed from the herd, their rations usually change again. Very few cattlemen feed an ailing animal at the same level as healthy ones are fed. Consequently, the disease appears to stop spreading.

Why don't all cattle develop foot rot when shifted to a new feed? The best way to answer this question seems to be with another question—why don't all people get the gout? Some systems, animal or human, just seem to respond differently to things than others.

Loose Housing vs. Stall Barns

Good loose housing and good stall barns are about the same so far as sanitation goes, according to University of Wisconsin researchers.

Last year they picked ten "average" dairy farms with conventional stall barns and without milking parlors and compared them to ten "average" loose housing set-ups with milking parlors. Then they made periodical visits, checking for sanitation problems. In addition to inspecting equipment and checking on sanitation practices, they took milk samples and tested them for bacteria.

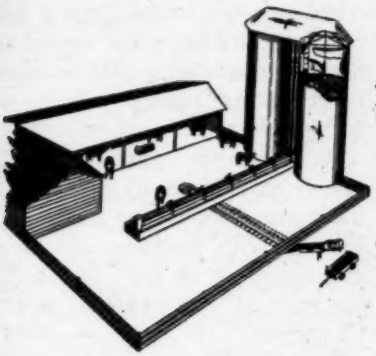
They found no definite differences in the quality of the milk that could be connected with the kind of housing and equipment used.

—Wisconsin College of Agriculture

Feed Heifers More Grain

When they don't get enough grain, many two-and three-year-old milking heifers will keep milk out of the pail to meet their body needs for growth, claims Richard S. Adams, extension dairy specialist at Penn State. Proper feeding of milking heifers during their lactation and during their first dry period may result in a tremendous increase in production efficiency as well as improved health and reproduction.

New Ideas For The Feedlot



A review of latest research on feeding practices . . .

Condensed from Florida Cattleman and Livestock Journal

T. J. Cunha, Department of Animal Science, Florida Agricultural Experiment Station

THE livestock industry has entered the "space age" as far as new developments in feeding are concerned. Alert, progressive feeders need to keep abreast of these new developments in order to increasingly improve their efficiency of operation.

Vitamin A . . .

During the last year much interest has occurred with vitamin A. This has developed from studies showing that vitamin A has been beneficial with rations which supposedly had all the carotene needed by cattle.

There are some investigators stating that one reason for this higher vitamin A need is that higher levels of nitrogen fertilizer are being used. This in turn increases the nitrate level in feeds. In the rumen, these nitrates are changed to nitrites which in some way affect carotene utilization and thus increases the need for vitamin A.

Whether this is the exact and only reason for this supposed increased vitamin A need is not yet known. It might be that part of the increased need for vitamin A may be due to a need which has not been recognized until just recently.

There is considerable variation in the level of vitamin A being presently recommended. It will vary from 5,000 to 30,000 I.U. per steer daily. Since the cost of vitamin A is so low, the writer would tend to recommend the use of higher levels of vitamin A of

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The Florida Cattleman and Livestock Journal, 10 Verona Street, Kissimmee, Florida

20,000 to 30,000 I.U. per steer daily.

This would insure an adequate intake level of vitamin A until more accurate information is available on its needs by cattle under varying conditions. Later, the level can be lowered if need be. Two pounds of extra gain should pay for all the vitamin A needed during a 150 day feed-lot period.

Ringworm is caused by a fungus; sometimes clears up without treatment though treatment is effective. Ringworm can spread rapidly among confined calves.

Of much importance is the Purdue Station finding that steers fed vitamin A during the summer gained faster, stayed on feed better and showed less distress to the heat.

Purdue also found that Aureomycin was not beneficial until Vitamin A was added to their ration at adequate levels. This is a very significant finding and may account for the variability which has occurred in antibiotic feeding with cattle rations. It may be that antibiotics will not give optimum response unless the cattle ration is adequate in vitamin A.

Enzymes and Tranquilizers . . .

Much work has been done with enzymes and tranquilizers during the last few years. Sometimes they help and other times do not. As a result the use of enzymes and tranquilizers for beef cattle is not clear. More studies are needed to determine why they help at some times and not others.

Stilbestrol . . .

At the present time it is estimated that 75 to 85 percent of the cattle feeders are using stilbestrol. With fattening steers it increases rate of gain about 18 percent and feed efficiency about 12 percent. If used properly, stilbestrol does not affect carcass quality nor cooler or transit shrink. The Purdue Station has found that the combination of stilbestrol with Aureomycin or Terramycin increases carcass grade over the use of either stilbestrol or the antibiotic alone.

The "Mycins" . . .

The use of either Aureomycin or Terramycin in steer feeding is increasing. They increase rate of gain five percent and increase feed efficiency about five percent. Most feeders will use a level of 350 to 500 mg. of Aureomycin or Terramycin for one to four weeks in combatting high disease level outbreaks or when first starting cattle on feed. After this period of high-level antibiotic feeding they may discontinue their use or continue feeding them at a level of 70-80 mg, per steer per day depending on the disease level and other stress conditions encountered in their feed-lot.

The antibiotics are most help-

ful the higher the sub-clinical disease level in the feed-lot. They have been shown to be beneficial with increasing hair coat bloom as well as combatting foot rot, scours, shipping fever and liver abscesses.

High Concentrate Rations . . .

Much interest has developed in the use of high concentrate rations without hay or with very little hay. Those who are using high concentrate ratios without hay can do so without bloat and founder but must have good feeds and excellent management of the animals.

Those who do not have well trained personnel to take care of their cattle had better be careful in feeding high concentrate feeds without hay or other bulky feeds. Nature intended for cattle to eat roughage feeds. Anytime one goes against nature he needs to know what he is doing and use good feeds, well balanced rations and pay constant attention to his management.

Pelleting Feeds . . .

A great deal of research has been conducted on pelleting feeds in the last year or so. The pelleting of feeds is of value in cattle feeding and in most cases will increase animal response. The big question is, will the additional response pay for the cost of pelleting? Sometimes it will and other times it will not. As new engineering developments occur with pelleting equipment, the cost of pelleting will decrease and there will be more cases where pelleting will pay.

Pelleting is the most helpful with low quality roughage rations. It increases their intake and speeds their passage rate through the digestive tract. At the present, pelleting will usually pay with low quality roughage rations. However, with high concentrate rations, about the only way that pelleting would pay would be on the basis of better adaption to automation. Even then, the cost of pelleting would need to be balanced against the feasibility of use.

These are only a few of the many new developments in cattle feeding. These and many others are occurring rapidly and it behooves the livestock producer to stay abreast of them. Their application will result in more efficient and economical feeding programs on our livestock farms.

● *How To Control Soil Blowing,* is a new USDA Farmers' Bulletin 2169. It gives causes of and remedies for soil blowing. Some of the measures discussed are stubble mulching, cover crops, strip-cropping, crop rotations and fallowing, windbreaks, and rough and emergency tillage. Ask your county agent for a copy or write to Government Printing Office, Washington, D.C.

Bloat, Ever With Us

This age-old problem is still important . . .

Condensed from Western Livestock Journal

BLOAT, regarded by many authorities as the most troublesome of all non-infectious diseases of cattle, will have caused more than $43 million loss to livestock owners by the end of this year. And USDA scientists, college and university researchers, private agencies and stockmen are continuing the search for its cause — and prevention.

The condition is simple — it is an excessive accumulation of gas in the rumen which the animal cannot expel.

But the cause continues to baffle animal scientists, though theories and research reports are available by the dozen. One of the most widespread theories is that legume pastures are especially risky because animals don't consume enough roughage to activate expulsion of gas formed by the leafy legumes. Another is that muscles used to expel the gas are inhibited by certain substances. Some believe that saponins, which are highly concentrated in legumes, affect surface tension and result in a light frothy mixture in the bovine rumen which prevents gas from rising readily to the top where it is more easily expelled.

Theories. Clemson Agricultural College researchers suspect that there is a relation between bloat and level of fertility of soil on which forage is grown, claiming that bloat can be controlled by adequate fertilization with phosphate. "Since the phosphorus level in relation to levels of nitrogen and calcium appears to be the controlling factor," the Clem-

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Western Livestock Journal, 4511 Produce Plaza, Los Angeles 58, California

son workers say, "it may be possible to prevent bloat in animals on legume pastures by providing an adequate level of available phosphates in the soil."

Dr. Ralph Bogart of Oregon State College recently reported that bloat is an inherited tendency in beef cattle. In tests with 250 college calves chronic bloat showed up in seven out of 13 offspring of "bloater" bulls mated to "bloater" cows or to cows closely related to the bulls. Less than 4% in the regular breeding herd were bloaters. Since the Oregon tests indicated that bloat is heritable, Dr. Bogart believes it may be possible in time to pin down the genetic make-up for bloating and thus help cattlemen to select against this abnormality.

Still other theories on the cause of bloat are overfeeding, use of rations to which animals aren't accustomed, climate, weather conditions, etc.

How It Kills. There is also controversy over how bloat kills. One theory is that pressure of the increased volume of gas in the rumen causes suffocation by changing the breathing and flow of blood. Another is that oxygen in the blood is blocked by gas and other toxic substances which pass into the blood from the rumen. Still another is that pressure of gas in the rumen speeds absorption of some substances which normally would be expelled.

Usually the first and most prominent sign of bloat is swelling of the paunch or rumen, located on the left side. It is unwise to depend upon the amount of swelling to determine seriousness of the bloating. Some animals may be severely swollen but not in great distress. Other animals may show little swelling but be in great distress. Often, animals on lush legume pastures will bloat very fast.

When you get all wrinkled up with care, it is a good idea to have your faith lifted.

Other symptoms of bloating include a stop in grazing, distressed appearance, open mouth, excessive drooling, standing with feet wide apart, kicking at the abdomen, unsteady gait, feeble belches or lack of belching and shallow, rapid breathing. One of the signs of severe bloating is a blue discoloration of the mouth and eye membranes. This last symptom may precede convulsions and death by only a few minutes.

Prevention. Management practices are most important in preventing bloat. Since lush legume pastures frequently are blamed for many eases, it is wise to graze animals also on pastures containing grasses high in fiber while grazing legume pastures.

Another important consideration is to refrain from allowing

hungry animals into lush pastures. It is best to provide them with some cured hay each day before permitting them to graze pastures containing young legume plants.

Especially in the spring when incidence of bloating is highest, stockmen should watch cattle and sheep closely when they are first turned onto pastures. It also is a good idea to let the animals become accustomed to lush pasture gradually. To reduce the chances of bloat in the feedlot when freshly chopped legumes are fed, it is recommended that some roughages also be included in the ration.

Treatment. Prompt treatment by a veterinarian is vital in bloat cases. While awaiting the arrival of a veterinarian, put a gag in the mouth of the affected animal and stand the animal with its rear quarters lower than the front. It is also a good procedure to walk the bloated animal slowly up and down a hill if one is sure bloat is in the early stage and distress is not too great.

In treating bloat, the object is to remove the excessive gas or froth. Frequently this can be done by means of a stomach tube. In extreme cases, an operation through the animal's left flank may be necessary.

Milk Can Be Stored Too Cold

Contrary to popular opinion, it isn't always the coldest milk that keeps best and tastes best, according to Paul Johnson of Oklahoma State University. He advises dairymen to keep milk at 38 to 42 degrees rather than 32 to 34 degrees.

Johnson reports that in Oklahoma agricultural experiment station tests milk kept at 47 degrees for 48 hours showed less tendency to develop rancid flavor than did milk from the same cows which was kept at 32 degrees for 48 hours.

The same trend toward development of rancid flavor at lower storage temperatures was noted when milk was kept for 24 hours.

Johnson said that rancid flavor in milk is due to an enzyme called "Lipase". Scientists believe that at low temperatures lipase promotes breakdown of the fat globules in milk. Products of this breakdown, principally butyric acid, give the milk a rancid flavor. On the other hand, if milk is held at high temperatures, as 38 to 42 degrees, the lipase is destroyed by combining with oxygen.

—D.H.I.A. Cow Scope

Vaccination . . . Miracle or Menace

The services of a licensed veterinarian are recommended for getting the most value out of a vaccination program for your livestock . . .

Condensed from The National Future Farmer

VACCINATION is a vital tool in the efficient, economical production of livestock, but it has its limits. To give the protection expected, you have to use vaccines in the right way at the right time.

Take for example, vaccinating against hog cholera. If the pigs aren't in good condition, the vaccination probably won't be successful, or only a weak immunity will result.

Usually your veterinarian will want to check the herd carefully before he vaccinates against cholera. He checks for signs of other diseases and for a heavy parasitic infestation, because that will interfere with vaccination results. He also takes into consideration general herd condition, and the conditions in the locality before deciding which type vaccine to use. Not until all these checks are made is he ready to vaccinate.

Length of protection against disease varies. Some vaccines protect immediately, but the results endure for only a short time. Other vaccines build protection slowly, but the protection lasts a long time. So the choice must be made between the two, depending on the problem to be met.

There is another thing you have to consider. Some animals respond better to vaccination than do others. Even litter mates may react differently. Of course, a healthy animal has a better chance to develop good immunity than does a sickly one. Also, how well-fed an animal is can have a direct bearing on how well he builds protection after vaccination. Other factors enter in, too—such as age of the animal, climate, and fatigue.

"Misunderstood" vaccination can be very dangerous. For example, don't confuse temporary serum vaccination with the lifetime type of vaccination. And, there is the danger of using "good enough" vaccine when a more efficient type—even though it costs more—would save lives. Equally dangerous is using a vaccine at the wrong time, or in improper amounts, or perhaps injected in an incorrect manner in the wrong places.

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All these factors add up to the same thing; successful vaccination isn't just a matter of sticking a vaccinating syringe into an animal and letting nature do the rest. There are too many things that may determine whether the result will be a success or failure. A good many livestock producers leave the whole matter up to their veterinarian for that reason.

But vaccination alone is not the magic answer, cautions the American Foundation of Animal Health. It cannot substitute for good management. A poorly-fed animal, kept in unsanitary quarters, will be a poor risk, no matter how well he is vaccinated. In this respect, some farmers are asking vaccines to do more than they were ever intended to do. They are an invaluable tool in profitable livestock production, but are never a substitute for all-around good management.

On the other side of the fence, some farmers aren't using modern vaccination to the extent they could. Again, take the case of hog cholera. Heavy outbreaks of cholera have hit in many areas because farmers let down their guard temporarily. These farmers were lulled into a false sense of security because they had "gotten by" for a few years without cholera vaccination and no outbreaks occurred. Then cholera struck and caused terrific losses. The only way to stop this, and many other costly diseases, is to keep herds vaccinated against them.

Many farmers are not acquainted with all the diseases against which modern vaccination is effective—cholera, erysipelas, enterotoxemia, blackleg, anthrax, sleeping sickness, rhinotracheitis, brucellosis, leptospirosis, and others. If you don't inform yourself on these diseases, and have your animals vaccinated when the need arises, you are missing a good bet, and missing profits.

New Corn Growing System

A tillage system for planting corn in cornstalk residues has been developed at the University of Nebraska. As reported by Engineer T. D. Wittmus, it consists of cutting stalks, planting, cultivating, and ridging for planting. A machine has been developed for the planting without any other tillage, and without loss in yields. The experiments showed only .96 of an hour of labor needed for till-planting an acre, as compared to 2.39 hours for conventional tillage, and a cost of only $6 an acre compared to $13.50, with 4-row equipment.

—University of Nebraska

Vitamins and Their Relationship To Animal Health

Much has been said about vitamins for animals. Learn more about them from this Western Australia article . . .

Condensed from The Journal of Agriculture of Western Australia

J. Shilkin, B.V. Sc., Assistant
Chief Veterinary Surgeon

NUTRITIONAL problems are assuming more and more importance in stock as the years progress and while much stress is sometimes placed on the role of vitamins in nutrition, one should not lose sight of the fact that they are only part of a balanced ration which should include other constituents, such as proteins, carbohydrates and fats in suitable proportions.

Nevertheless, vitamins are important constituents of the diet and although they are only required in minute quantities, deficiencies of any of them may give rise to serious disease conditions and in some cases, even death.

Generally speaking, the vitamins which are likely to be deficient in livestock are vitamins A, and the B complex, D, E and K, and as they have different uses in the body and consequently their deficiencies will produce different symptoms, it would be as well if we considered them separately.

An Important Role

Vitamin A, as well as being first on the list, is also one of the most important in relation to animal health. It can be obtained from the livers of salt-water fish, birds and mammals and much of it is obtained in the form of shark liver oil. It is readily oxidised and as a result, easily destroyed, particularly in the presence of heat, so that care is obviously necessary in dealing with vitamin A preparations. Cod liver oil, for example, will retain its potency in the bottle for long periods but when mixed with feed will deteriorate rapidly due to

Reprinted by permission from The Journal of Agriculture of Western Australia, Department of Agriculture, St. George's Terrace, Perth, Australia

this oxidation process. Much vitamin A is destroyed too in the ordinary field curing of hay, and the admixture of trace minerals which is commonly practiced these days also speeds up the oxidation process.

In the body, vitamin A is absorbed from the small bowel and stored in the liver and, for this reason, animals fed on rations that are deficient in vitamin A may not show any obvious symptoms for several months, depending, of course, on the amount previously stored.

Its main functions are those relating to the development of epithelial tissue of all kinds in the body and this includes the cells of the skin and the lining of all other tissues such as that of the respiratory tract, bowel wall, breeding tract, eyes, etc. It is also necessary for normal growth of bone.

With such all-embracing functions, the results of any deficiency may easily be seen—the weakening of the dependent tissues may lead to respiratory infections, bowel infections, eye and skin diseases, abortions and paralysis resulting from bone abnormality, particularly of the spinal column.

In cattle and sheep, owing to the capacity of the liver for storage, vitamin A deficiency is uncommon and usually only occurs in drought time when there is no fresh green feed or when they are hand-fed on concentrates with insufficient hay, or hay of poor quality. In calves, feeding on skim milk before they eat pasture may produce symptoms of deficiency.

In pigs, vitamin A deficiency is a relatively common occurrence, particularly where they are fed on boiled garbage and concentrated food without green feed. Paralysis, particularly of the hindquarters, is often an early result of this type of feeding. Other symptoms in pigs that may be associated wih vitamin A deficiency are watery eyes, blindness, either partial or complete, sterility, abortion, the birth of abnormal piglets, dermatitis and sudden deaths.

There's one milk cow for every ten persons in the United States—17.5 million cows to 180 million people.

Poultry are also extremely susceptible to vitamin A deficiency and here again paralysis and respiratory infections are commonly seen.

The feeding of poor quality chaff or prolonged droughts may also cause deficiency symptoms in horses and deficient rations may also cause trouble in dogs and cage birds.

Vitamin A is obviously then a very important food constituent and every care should be taken

to ensure that animals of all kinds are adequately supplied.

The Vitamin B Complex

The vitamin B complex, as this group of compounds is called, was once thought to be one vitamin. Now, however, it is known to be made up of a large number of separate vitamins, each with different functions. The most important of this group in animal and human nutritions are:—

(1) B-1, also known as Thiamin or Aneurin.
(2) Riboflavin or B-2.
(3) Nicotinic Acid or Niacin.
(4) Pyridoxin or B-6.
(5) Pantothenic Acid.
(6) Choline.
(7) Biotin.
(8) Para aminobenzoic acid.
(9) Vit. B-12—also known as the Animal Protein Factor.

Most of this group of compounds are not important in the ruminants such as sheep, goats and cattle as they are synthesised in the alimentary tract by bacterial action.

However, symptoms of vitamin B-1 deficiency may occasionally occur in pigs and dogs. In pigs, particularly during pregnancy and lactation, deficiency may cause loss of appetite, wasting, leg weakness and heart failure. In dogs fed entirely on cooked or canned meats, symptoms very similar to those of the condition known as beri beri in humans may occur.

As the B-1 requirements of cats are four times that of dogs, deficiency is more likely to occur in this species. A reddish colouration of the gum at the junction with the teeth often appears as the earliest sign of thiamin deficiency. Loss of appetite, weight, vomiting, excessive salivation, inco-ordination and prostration are other symptoms that have been seen in cats.

The man who has nothing to boast of except his ancestry is a lot like a potato—the best part is underground.

Nicotinic acid deficiency does not occur in ruminants but in pigs deficiency readily occurs on a diet of skim milk or maize or other cereal products. In such cases, there is loss of appetite, diarrhea and possibly paralysis. A condition in dogs known as Black Tongue in which there is diarrhea and ulceration of the tongue is considered to be due to a Nicotinic Acid deficiency and in cats the symptoms are somewhat similar.

Deficiencies of most of the other vitamins of this group are unlikely to occur except on experimental rations but vitamin B-12 has become of considerable interest and importance in recent years. It is essential for tissue regeneration and for the full utilisation of carbohydrates and pro-

teins and it is concerned in growth, blood formation and in the normal functioning of the liver and the nervous system. Deficiency will cause a failure to thrive and grow, certain breeding problems and it may play a part in a number of the metabolic conditions, such as milk fever, acetonaemia and pregnancy toxaemia.

Vitamin B-12 is synthesised in the rumen of cattle and sheep but for this purpose cobalt is essential. Where this is deficient, therefore, symptoms which can more correctly be attributed to vitamin B-12 deficiency, are likely to occur.

Vitamin C, whilst important in human nutrition, does not appear to be very important in animals as most of them synthesise it in their bodies.

Vitamin D, however, is a very important one. Fortunately, direct sunlight is the most potent source of this vitamin, so that deficiencies are most likely to occur only where sunlight is inadequate and in most areas of this State, this should not really be a problem. However. it is possible for vitamin D deficiency to occur even when vitamin D supplies are adequate but where there is a gross imbalance of calcium and phosphorus in the diet as metabolism of these minerals in the body is initially bound up with vitamin D.

The most important disease condition associated with vitamin D deficiency is the well known "Rickets" which may occur in the young of most animals.

Vitamin E also appears to be an important vitamin in animals and poultry and deficiencies in some animals and birds are not infrequently seen.

It is possible to induce a vitamin E deficiency by feeding large amounts of cod liver oil which has a tendency to inactivate vitamin E.

In poultry, deficiency may be responsible for several serious conditions, particularly in young chickens and in calves and lambs it may produce a type of muscular weakness known as White Muscle disease. Vitamin E also has some effect on heart muscle and in some heart conditions in animals, particularly dogs and cats, it appears to be very useful.

Corn silage is an economical source of energy for dairy cattle. However, corn silage is low in protein and should be supplemented with protein.

It is thought to play some part in sterility in animals but there is still a good deal of uncertainty on this point.

The only other vitamin which may be considered of some importance in relation to animals in the present date of our knowledge is vitamin K and in chick-

ens, deficiency of it may cause a haemorrhagic disease which can cause considerable mortality in chickens.

From this brief review it can be seen that vitamins may play quite an important part in animal nutrition but it can be taken for granted I feel sure, that as time goes on much more information relating to their effects will be accumulated.

Check Milking Machine Now

Defective or improperly operated milking machines can be an important cause of mastitis in the milking herd, says W. L. Northern, West Virginia University.

"Dairymen should acquaint themselves thoroughly with the complete mechanism of their machines and learn to detect faulty operation," Northern emphasized. "Milking machine deficiencies may develop slowly and unnoticed. Regular checks of the entire system is the only way to be sure everything is operating properly."

Northern listed these points to remember:

1. Install and maintain all parts of the milking system according to the manufacturer's directions. 2. Be sure the pump is adequate to do the job. Pumps too large cause no trouble. Pumps too small are behind many mastitis problems. 3. Install vacuum lines large enough. Larger lines are well worth the extra labor and expense of installation. 4. Place the vacuum controller to insure that no part of the line will have higher vacuum level than any other. 5. Regularly clean all vacuum lines. 6. Dismantle and clean vacuum controllers regularly. 7. Have the system checked for leaks. 8. Regularly, at least once a month, check the milker units. 9. Carefully check, clean, and service the pulsators as recommended by the manufacturer. 10. Carefully check the teats for signs of milking machine injury. 11. Obtain the services, if available, of a conscientious milking machine service man. Let him check the entire system at least once a year.

—West Virginia University

New Use For Tranquilizers

The Leonard Brothers of Route 4, Louisburg, North Carolina, have witnessed a new use for tranquilizers. One of their sows farrowed a large litter of pigs recently. But once the pigs were cleaned up, the sow refused to take them back. The Leonards called a veterinarian who gave the sow two tranquilizers. After that, she accepted the pigs.

—North Carolina State College

Hydrocephalus Is Inherited

The remedy for this condition is largely in the hands of purebred breeders, this experiment station article reports . . .

Condensed from Nebraska Experiment Station Quarterly

Marvel L. Baker, Loyal C. Payne, and *Guy N. Baker*
of Nebraska Experiment Station

A HYDROCEPHALIC condition frequently observed in newborn calves is inherited as a single-factor simple recessive.

This is the conclusion based upon two years' data from planned breeding work conducted at the North Platte, Nebraska, Experiment Station. This conclusion is also supported by studies made of data supplied by interested purebred breeders and information from commercial cattlemen.

Hydrocephalus is not a new thing; it has been reported over a period of many years, from several states and from foreign countries. It has been observed in cattle of different beef and dairy breeds, in other domestic animals and in other mammals, including man, the pig and rodents.

Symptoms

Reports from producers and our own observations indicate that calves are frequently and perhaps usually born alive. They are weak and make little effort to stand. After floundering weakly for a time they lie on the ground with their feet close to the body. The head is not held in a normal position. Frequently, it is held lower than normal with the ears drooping. Sometimes it is thrown back along the calf's side. The calves emit a characteristic bawl and are often called "bawlers."

No case of a hydrocephalic calf standing or nursing has come to our attention. They die within a short time. Attempts to rear them by feeding have succeeded only in prolonging life by a day or two at most, judging by reports to us and from our own observations.

The forehead frequently is noticeably bulged, the skull dome-shaped, the eyes small and the eye-socket reduced in size. The lower jaw frequently is light, tapering to a narrow muzzle. The teeth are poorly developed. Calving is usually accompanied by the discharge of excessive amounts of amniotic fluid.

Reprinted from Nebraska Experiment Station Quarterly, College of Agriculture, Lincoln 3, Nebr.

Research

The occurrence of hydrocephalic calves has attracted the attention of commercial cattlemen. They co-operated in the research by supplying 40 cows which they had marked as producers of such calves. One of them also supplied a bull known to have sired hydrocephalic calves. The breeding work extended over a period of two years. In each year, one-half of the cows were bred to the known sire of hydrocephalic calves and the remainder to a bull from which such calves had not been obtained. During the two years, both groups of cows were bred to both bulls.

Thirty-seven normal and no hydrocephalic calves were sired by the bull with no known background of hydrocephalus. The cows bred to the known sire of hydrocephalic calves produced 32 calves in the two years; of these, 26 were normal in appearance and 6 were hydrocephalic. Assuming that the condition is inherited as a single factor, simple recessive, the expected numbers would be 24 normal and 8 hydrocephalic. However, the variation from the expected is well within the limits of chance.

Data from a purebred herd also were obtained. From cows and bulls which had been identified previously as producers or sires of hydrocephalic calves, 32 calves were obtained.

Among these the ratio of normal to hydrocephalic was 23:9, the expected ratio would have been 24:8. Other extensive but less critical data also support the hypothesis that hydrocephalus as frequently observed in cattle is genetic in nature and inherited as a simple recessive. There is no indication that hydrocephalus is necessarily associated with dwarfism, although, of course, it would be possible for an animal to carry the genes responsible for the two conditions.

It takes a wise man to discover a wise man, but anybody can spot a fool.

As most breeders know, in cases of inherited defects attributable to a single factor recessive both parents must transmit the gene.

The Remedy

The remedy for hydrocephalus is largely in the hands of purebred breeders and lies in the careful screening of herd bulls and the prompt elimination of bulls known to be heterozygous for the defective gene.

There is no question but what the hydrocephalic gene is wide spread. This is not a reason for alarm. However, knowledge that the condition is hereditary should alert breeders to be on their guard and to apply the remedy mentioned above without hesitation or delay.

As a matter of fact, cattle and other livestock producers should be alert to other abnormalities observed in their herds and flocks. There is little or no doubt that many lethal or destructive genetic factors are widely distributed in animals. With the mating systems generally used losses due to these destructive genes are relatively low and frequently dismissed with little consideration. It is when one of them, such as the gene for dwarfism or hydrocephalus, increases greatly in frequency that it causes considerable loss and attracts widespread attention.

A gene responsible for an abnormal condition may increase in frequency because it is associated with some other factor or feature in the heterozygous animal which causes us to favor the heterozygote or "carrier" in selection; or it may occur as a mutation or be introduced into a reputation herd by chance. It may then be a few generations and several years later before its presence is detected. In the meantime the gene may be spread widely because of the popularity of cattle from this herd, and carried by animals which are not suspected until they are mated with other animals which also are heterozygous for the gene.

It is too much to expect that genes responsible for lethal, semilethal or abnormal conditions can be eliminated completely from the genetic composition of our farm animals. They constitute merely one more of the hazards and difficulties encountered by breeders and producers.

Destructive genes can be coped with, controlled and lived with if breeders will only observe their operations closely, challenge such abnormalities when they occur, attempt to determine as realistically as possible whether or not they are genetic in nature; and if so, proceed to work away from the problem as quickly and with as little loss to themselves or damage to their fellow livestock producers as possible.

Look For Symptoms Of Cholera

Farmers are warned to look for symptoms of hog cholera, such as going off feed, one or more pigs lying around and dying. listlessness, and development of a high fever. A high death rate usually results from an outbreak. A veterinarian should be consulted immediately for treatment.

Preventive steps include vaccination of pigs raised at home and of newly purchased feeder pigs. Farmers are further warned to purchase only ear tagged feeder pigs from reputable livestock dealers and market operators, so that any outbreaks can be traced and possible sources of infection located and eliminated.

—Wisconsin Department of Agriculture

Cattle Dehorning Methods Improved

An interesting review of value to the cattle raiser.

Condensed from Iowa Farm Bureau Spokesman

AS IN so many other fields of animal husbandry, there have been a number of changes and improvements in the techniques and practices of dehorning cattle in recent years.

They have brought greater efficiency to the job, reduced the hazards, and have given a wider choice in methods to be used for the particular age and type of animal to be dehorned.

For the cattle owner who has not reviewed the subject recently, a brief summary may be of interest and value.

With young calves, veterinarians now use one of three methods to remove the horn buttons by removal or destruction of the epithelial cells which later produce the actual horns. One method is to destroy these cells by caustic alkalis or acids. In other cases, the veterinarian may use actual surgery. A third way involves the use of instruments called "gouges."

These methods are used from early calfhood until the time the horn button has reached about 3 inches in length, although most authorities prefer not to use caustics after the button is more than an inch long. Considerable care and know-how are needed with the caustic method, to avoid damaging tissues other than that which produces the horns, and to prevent scarring the animal's head.

After the horn has grown to 3 inches or more, other methods and instruments are generally used. Perhaps the instrument most widely preferred by veterinarians for this age group is the dehorning clipper. This four-sided blade, activated by gears, cuts off the horn while it is still immature. The hazard involved in this method is the heavy bleeding which usually occurs. To control such hemhorrage, one or two steps is taken: An anti-bleeding agent is administered at the time of the operation, or the arteries are pulled by the use of "hemostats."

Reprinted by permission from Iowa Farm Bureau Spokesman, Grundy Center, Iowa

Electrically-operated saws are also used by some veterinarians for immature horns. The operator has to be quite skilled with such powerful saws, however, because of the chance of cutting off an ear, or making a wrong cut.

In dehorning mature cattle with fully-developed horns, other problems arise. More precautions need to be taken, and greater restraint on the animals is required. With valuable and aged breeding stock, most veterinarians use two added measures for the safety and well-being of the animals themselves: 1. a tourniquet to stop excessive loss of blood, and 2. a local anesthetic to reduce the pain of the operation. The anesthetic is injected in the vicinity of the cornual nerve and produces an almost instantaneous nerve block.

Several further precautions also are generally taken when older cattle are dehorned. In such cattle, the frontal sinus cavities often extend into the base of the horns. Thus, when horns are removed, these cavities are exposed to infection, rain, flies and insects. For this reason, sterile bandages are generally applied.

With cattle that have a high value, it is also a good idea to have tetanus anti-toxin given at the time of dehorning, to prevent the possibility of lockjaw developing. Generally, one should not have dehorning done during excessively cold or rainy weather. The exception, of course, is when an animal breaks a horn, and the matter has to be taken care of as an emergency.

After the dehorning, the owner should keep the animals under observation, especially for hemmorhaging or for signs of infection. If either of these develops, a veterinarian should be called immediately. P r o m p t attention may mean saving the animal's life.

Veterinarian Warns Of Hardware Disease

A little time spent in cleaning up barnyard debris may pay big dividends in preventing hardware disease among cattle, according to a University of Florida veterinarian.

Dr. C. B. Plummer, Jr. warns that cattle may pick up nails, pieces of wire and similar objects lying around with their feed. If the sharp objects penetrate from the stomach into the lungs, heart or other vital organs, death may result.

Symptoms of hardware disease include loss of appetite, stiffness, decrease in milk flow and swelling in the brisket. If such symptoms are noticed, a veterinarian should be contacted at once. An operation may save the animal if the trouble is spotted in time.

—University of Florida

A Life Cycle Health Plan For Cattle

Cattle losses start before you see your calves. To prevent them, a program of preventive measures should be used. This article gives the details . . .

Condensed from National Live Stock Producer
Stewart H. Fowler, Louisiana State University

ANY successful cowman or feed-lot operator must know fully what's behind such diseases as: Brucellosis, vibriosis, leptospirosis, anaplasmosis, trichomoniasis, hemorrhagic septicemia and a host of other beef cattle diseases which are just waiting to foul up old Bossy's production and reproduction.

Each ounce of precaution exerted in heading off a disease before it strikes is worth many pounds of cure later. The application of the proper precaution, unfortunately, is limited to the extent of your knowledge of "what, when, where and how" diseases and parasites may sabotage your beef enterprise.

These "bovine fifth columnists" are hard to whip. This is plainly evident from the tremendous annual losses they inflict on our cattle industry. Field surveys indicate an annual loss of more than 1½ million cattle and 2½ million calves! Deaths and sickness caused by cattle diseases, including nutritional ailments, cause losses of more than $650 million yearly. More than $400 million represents loss to cattle and calves, and about $250 million is the loss in value of milk production. Did you know that vibriosis alone costs you and your fellow cattlemen nearly $140 million yearly? Leptospirosis and brucellosis each inflict an additional $100 million loss.

Losses from diseases and parasites continue after your cattle and calves go to market. Last year, 54,108 cattle and 27.865 calf carcasses were condemned under Federal Meat Inspection for various diseases and abnormal conditions. In addition, nearly 2½ million cattle and calf livers were condemned.

These losses from deaths and condemnations fail to measure the full cost of cattle diseases and parasites. We must also consider the decrease in production effi-

Reprinted by permission from National Live Stock Producer, 139 N. Clark St., Chicago 2, Illinois

ciency and the increase in production costs. In addition, several diseases may cause sterility or greatly reduced reproductive efficiency.

Base Health Plan On Prevention

Poor sanitation and management practices are the biggest disease and parasite dangers to cattle. This means, of course, that the remedy lies in the hands of the individual cowman and feed-lot operator. Since beef cattle are out in the open much of the time,

Money may be filthy, but it will buy a lot of soap and disinfectants.

they are exposed to less infection with diseases and parasites than dairy cattle that are in closer confinement and in close contact with each other. Unfortunately, however, beef herds usually are inspected less frequently than dairy herds. Thus, diseases and parasites often gain an upper hand before trouble is suspected.

Cowmen who make a profit year after year are aware of and make every effort to control diseases and parasites within their herds and feed lots. They follow a life-cycle plan of cattle health which is based on prevention rather than cure.

Some diseases can't be prevented by means now available. the diseases and parasites discuss- But, heaviest losses are caused by ed below, and a conscientious effort to control them will give a larger percentage of marketable cattle and calves at shipping time.

Cattle losses start before you see your calves. And, they carry through until your steers clear the packing plant. Certain types of losses are more characteristic or prevalent during specific periods of the calf's life cycle. In considering the diseases and parasites that may plague your cattle enterprise, let's discuss them under three phases of the operation: (1) the breeding herd, (2) your young calves, and (3) feed-lot cattle.

First, consider your cow herd. This is your producing unit. It might be compared to a manufacturing plant in that you can have an economical operation only if the unit operates at top capacity and peak effiicency. Any abnormal condition that decreases the unit's efficiency is of real economic concern.

Your nonbreeding and shy-breeding females lose you many calves and hundreds of dollars yearly. These "bovine cheaters" are real economic liabilities. Their faulty reproductive performance may be due to: (1) inherited or congenital infertility, (2) "acquired" infertility, or (3) nutritional infertility.

Cull Shy-Breeding Cows

Certain differences in regularity of breeding, abortions, and

stillbirths appear to be hereditary. Records indicate that certain cow families are inherently poor breeders. Various abnormalities of the reproductive tract associated with infertility are also genetic in orgin. Consider these factors in your culling program. Regular breeding cows with a calving interval of 12 months or less are absolutely essential to efficient production. It is unwise to retain in the herd any cow that is a shy breeder or one that fails to calve without a good reason. Also, don't put the few offspring of such individuals into your breeding herd as you will only multiply your troubles.

Most of your replacement heifers will come from your own herd. Thus, it is important to use only bulls that are from highly-fertile, regular-calving cows. Such bulls will pass that factor to their daughters. In selecting your replacement heifers, consider only those from highly-productive, deep-milking cows.

"Acquired" infertility may result from injuries to the reproductive tract that make it physically impossible for the cow to become pregnant, or it may occur with certain infectious diseases that cause contagious infertility in cattle. The "Big Four" among diseases affecting reproduction are brucellosis, vibriosis, leptospirosis, and trichomoniasis. All four may have a temporary or permanent influence on fertility. Abortion is characteristic of each. Inflammations and discharges from the reproductive tract may be present.

The "Big Four" Diseases

If you note such symptoms in your cow herd, there's a strong possibility that one of these contagious diseases is present. Accurate diagnosis requires cooperation with an informed veterinarian who is in close contact with a properly equipped diagnostic laboratory. Once you know which disease you are faced with, it can usually be brought under control by use of vaccines, antibiotics, and/or management practices aimed at eliminating the infection from your herd.

An American will work hard on a farm so he can move into town where he can make more money so he can move back to the farm.

Poor nutrition can also give you a low calf crop and a high percentage of dry cows. Poor nutrition may occur in the form of insufficient feed or inferior quality feed that is deficient in certain of the essential nutrients — and quite often as a combination of both.

The four major nutritional "stumbling blocks" to peak reproductive performance are: (1) undernourishment, (2) lack of

vitamin A, (3) calcium and phosphorous imbalance or deficiency, and (4) iodine-deficient rations.

An undernourished animal in poor physical condition is not in the best condition for normal reproduction. If undernourishment is due to a restricted feed intake that is insufficient for maintenance and growth, infertility will probably result. Cows will tend to exhibit irregular heat cycles, or they will have silent or very short heat periods. Pregnant cows must gain about 100 pounds between weaning their previous calf and their next calving in order to maintain their flesh. Heifers lose more weight than cows during the first half of their lactation period. Thus, if they are to grow and develop normally, they must regain this loss in addition to making some extra gains before their second calving. This is why heifers are more sensitive to feed shortages than are mature cows, and this is why many heifers fail to breed under poor feed conditions.

Vitamin A deficiency is a major cause of nutritional sterility among farm animals. If the cow's reserves of this vitamin are depleted during the latter part of pregnancy to the point where the animal becomes nightblind, she will abort a dead calf. Vitamin A deficiency may occur where prolonged drouth forces cattle to eat old, bleached range growth. Losses from vitamin A deficiency end as soon as green forage becomes available or when supplements are fed. If green grazing is short during late pregnancy, two pounds of high-quality hay (containing at least 35 milligrams of carotene per pound) or 0.6 pound of dehydrated alfalfa meal (100 milligrams of carotene per pound) may be fed daily to provide ample vitamin A.

Some men are known for their deeds, others for their mortgages.

Give Phosphorus Supplement

Phosphorus is the mineral most likely to be incriminated in reproductive troubles. Not only must there be an adequate amount present, but also it must be in proper balance with calcium to be utilized effectively. A phosphorus deficiency can cause irregularity in breeding as it has a marked inhibiting effect on the occurrence of heat. There is also a tendency for cows on phosphorus-deficient rations to reproduce once each two years. Under most range or pasture conditions, phosphorus deficiency can be avoided by supplying bonemeal or dicalcium phosphate in mineral boxes or feeders. Or, one of these supplements can be added to the concentrate feed mixture, using 20 pounds per ton of feed.

Iodine deficiency is usually associated with the birth of weak or dead calves. Fortunately, the need for iodine can be taken care of by feeding an iodine supplement such as iodized salt.

Now, let's turn our attention to general disease problems that can affect your cow herd. We will not attempt to cover all of the known diseases as space would not permit; however, we will try to go over those of major concern in the widest area of this country.

Forget the past. No man ever backed into prosperity.

First, let's consider a highly infectious disease with a high mortality rate—anthrax. Caused by a bacterium, this disease is spread through contaminated soil, drinking water, pasture, or feed. Flying insects and blood-sucking flies may serve as carriers. Infected animals show a sudden onset with a high temperature, loss of appetite, depression, and the passage of blood-stained feces. Pregnant animals often abort. Symptoms are followed by sudden death.

Anthrax can be prevented by immunization. Several excellent vaccines are available, but they are only seasonal in the duration of their immunity. Thus, they must be used every year to provide adequate protection. Be sure to provide effective fly control during the insect season. Burn animals that die from anthrax without opening any body cavities.

Anaplasmosis is now recognized as a major cattle disease in this country. It is thought to be caused by a blood parasite comparable to the malarial organism in humans. It is more troublesome in areas where blood-sucking vectors abound. Death losses from this disease cost cattlemen millions of dollars yearly.

The disease may be spread by insect bites or by any operation that will contaminate the blood of susceptible animals with blood of carrier animals. The disease results in the destruction of the red blood cells of the infected animal, resulting in an acute anemia. The first three symptoms of anaplasmosis to appear are: (1) an abrupt decline in milk production in lactating cows, (2) a slight decrease in appetite, and (3) an intermittent inclination of the affected animal to recline and to stay apart from the herd.

The mortality rate increases with the age of the animal involved. Young animals—calves and yearlings—are very lightly affected. After exposure, they become immune but may serve as carriers of the disease. Greatest severity occurs in cattle two or three years of age or older, with

mortality ranging between 20 and 50%. Most cases occur in summer and early fall when horseflies, mosquitoes, ticks, and other insect vectors are most abundant.

Control measures for anaplasmosis, so far as medication or vaccination at the persent time are concerned, are almost entirely lacking. Some of the antibiotics have showed some promise as therapeutic agents; however, sufficient work has not been done to establish practical control programs based on their use. Fortunately, if you are located in a problem area, there are certain husbandry practices that can help you live with the disease.

First, introduce only young animals into your herd or area, whether it be bulls, replacement heifers, or stocker cattle. Second, when castrating, dehorning, ear notching, instruments should be washed free of blood and disinfected following each use; and clean sterilized separate needles should be used in vaccinating and bleeding each animal. Third, make every effort possible to control blood-sucking insects.

Blackleg Is Highly Fatal

Blackleg is a highly fatal and rapidly progressive disease. It usually affects cattle between 6 and 24 months of age, but it may occur in younger or older animals. The disease is most prevalent in the spring and fall. It is caused by a hard-to-kill microorganism which can live in the soil (especially in low, swampy land) for many years.

First symptoms noted are high fever, loss of appetite, lameness, rapid breathing, and listlessness. Gas-filled, tumor-like swellings that make a cracking sound when pressed, may appear in the muscles under the skin of the neck, shoulder, chest, and flanks. Temperature may reach 107° F., and most animals die within 12 to 36 hours after the first symptoms appear.

Poultry manure is said to be the richest source of plant food, followed by pig, sheep, horse, and cow manure.

Prevention consists of subcutaneous vaccination of all animals with 5 cc. of one of the approved vaccines. Proper vaccination provides an immunity that lasts 9 to 12 months or longer, and a natural immunity tends to develop when animals are about two years of age. If blackleg is prevalent on your farm or ranch, it will help to inject 2 cc. of blackleg bacterin in calves at birth and 3 to 5 cc. at 6 to 9 months of age.

Although not a contagious disease, bloat has been a real headache for cattlemen for many years. Like cancer and the common cold, the direct cause of bloat is not fully understood.

Briefly, however, bloat is the result of the inability of an animal to belch gases that are produced in the rumen during the fermentation process. The paunch becomes greatly distended on the left side in front of the hip bones. Breathing becomes difficult, and death occurs from suffocation.

Bloat appears to be most common with lush legume forage and hot, humid atmospheric conditions. Although we know no sure way to prevent bloat, its frequency of occurrence can be reduced by such management factors as: Avoiding straight legume pastures (in seeding pastures, try to obtain a stand of at least two-thirds grasses with the legume); feeding dry forage while cattle are on legume pasture; avoiding too rapid "filling" from an empty start; keeping animals continuously on pasture after they are first turned out; and keeping salt and water conveniently accessible at all times. Some of the antibiotics administered at low levels daily seem to help reduce the incidence of bloat; however, they can not be considered completely effective in the elimination of all bloat.

Insects May Spread Pinkeye

Some cattle are chronic bloaters, bloating either daily or intermittently. I once heard a veterinarian say that chronic bloat can be cured in one of two ways: Either by installing a zipper in the rumen, or through the judicious use of a knife and fork on isolated cooked portions!

Pinkeye is probably caused by a combination of bacteria, and it may be spread by insect vectors, infective dust, direct contact with infested cattle, etc. There is a profuse discharge of tears from one or both eyes, and affected animals will stand with their eyes partly closed to prevent direct light from entering. In later stages, pus forms in the infected eye, and blindness often results. The application of a sulfonamide or antibiotic preparation and protection from sunlight promotes recovery. The control of insects by spraying or dipping will reduce the spread of the infection.

Going on a wild goose chase is a poor way to feather your nest.

Internal and external parasites are also a problem. In areas where internal parasites abound, much can be done towards control through use of sound management practices, such as following a pasture rotation system; avoiding overstocking pastures; providing clean, uncontaminated sources of water and feed; and making routine therapeutic use of parasiticides and/or continual low-level therapy, as in the use of phenothiazine.

The recommended therapeutic dosage of phenothiazine for cattle is 0.67 ounce (20 grams) per 100 pounds of body weight. The maximum dose should not be over 70 to 80 grams of phenothiazine per animal. In cases where there is fairly heavy infection, the therapeutic dosage should be repeated again in 21 days. At the recommended dosage, phenothiazine removes 100% of the common stomach worms, the small hairworms, and the nodular worms. It also removes an average of 80% of all medium stomach worms and from 40 to 100% of the hookworms.

The dose can be administered as a drench, in a bolus or capsule, or mixed with a quantity of feed that will be consumed by cattle in a few hours. All animals should be treated whenever infections occur. Cattle should ordinarily be treated routinely in the spring and in the fall following the pasture season.

If cattle consume a low level (about 2.5 grams) of phenothiazine daily, the drug will have some killing effect on the female forms and the eggs that are passed in the feces. This low-level feeding program reduces pasture contamination and lowers the chances for infection of susceptible animals. Phenothiazine in the low-level feeding program can be administered in various ways. One mixture that has been satisfactory is the use of cottonseed oil meal or soybean oil meal and salt supplement at the rate of 4 pounds of oil meal, one pound of salt, and 5 grams of phenothiazine. Another mixture recommended is one pound of phenothiazine, five pounds of steamed bonemeal, and five pounds of salt.

Even though Old Dobbin may be losing the battle of horsepower on the farm, he is helping mankind make fuller use of his leisure time.

There are a number of insecticides available for the control of such common external parasites as lice and ticks. These include rotenone, DDT, BHC, chlordane, lindane, pyrethrum, and others. These compounds may be applied by pressurized spraying. From 200 to 400 pounds pressure is adequate for spraying cattle. There is a wide variation in the strength of the various commercial preparations, so you should follow directions carefully in preparing solutions. Check with your county agent or veterinarian to make sure you are using an approved product according to recommended procedure.

Isolate Sick and New Stock

Systemic insecticides are now taking the place of rotenone for the control of cattle grubs. One systemic, Trolene, is given as a

thumb-sized bolus. Another, Co-Ral, is used as a spray, which must be applied at high pressure. It has to penetrate the animal's hair so that it can be absorbed through the skin to be effective. Systemics must be used after the grub has entered the animal but before the larvae have reached the animal's back.

It will pay to provide isolation quarters for the quarantine of sick and new stock. It is advisable to isolate all new animals for a period of 30 days. This allows time to observe and test for various diseases. Be reasonably sure that your purchased replacements come from disease-free herds.

Now, let's turn our attention to the problems associated with young calves. First there is the problem of traumatic injury, which is largely due to calving difficulties. To hold this to a minimum, don't breed your heifers until they are big enough. Be sure that your heifers are healthy and not overly fat, and provide adequate and competent supervision at calving time.

Infectious, nutritional, and parasitic problems may also occur. Among the infectious diseases, we will find calf scours, pneumonia, and calf diphtheria to be quite common.

Calf scours, or the enteritis complex, is probably the most important of the diseases of calves. And, the prevention of scours is not a simple matter. Clean quarters or ample bedding in calving pasture at calving time and strict isolation and prompt treatment of sick calves should be provided. The addition of racks for hay and grain to prevent contamination with fecal matter will help prevent the consumption of infective material.

Calves are quite susceptible to the pneumonia complex. A cough and accelerated respirations betray the onset. The control measures for this again are good husbandry practices, coupled with good nutrition and the judicious use of biologics, antibiotics, etc. Care should be taken to avoid drafty, damp quarters and sudden fluctuations in room temperature.

Trouble is only opportunity in work clothes.

Give Cows Vitamin A

In some areas, calf diphtheria is quite a problem. The disease sometimes attacks calves as early as the third or fourth day after birth and is characterized by the formation of a diphtheritic false membrane on the mucous lining of the mouth and throat. Affected animals give a distinctive throaty roar on breathing, especially on inspiration. Prevention consists largely in segregating sick animals, thoroughly cleaning and

disinfecting stables and sheds, and examining healthy animals daily to detect new cases, which should be isolated soon as they are found. Infected animals should be confined to a small space; this leads to less exercise with less demand on breathing and less irritation to the larynx. The disease responds readily to sulfa pyridine alone or in combination with other sulfas and broad spectrum antibiotics.

The two major nutritional problems are deficiency of vitamin A and molybdenum toxicity. Lack of adequate vitamin A in the pregnant cow's diet results in the birth of dead or very weak calves. The calves that survive are oversusceptible to many diseases. However, adequate supplementation of the cow's diet with carotene will prevent this problem.

The most common parasitic problems in calves include stomach worms and coccidiosis. Phenothiazine and good sanitation will take care of the stomach worms. Coccidiosis is a parasitic disease that usually affects young animals between three weeks and six months of age. Unsanitary and crowded conditions predispose to the development of this disease. The affected calves develop an unthrifty condition, rough hair coat, weakness, bloody diarrhea, and may die. Treatment with sulfamethazine may break the cycle of the disease, but improved sanitary measures aimed at prevention give the greatest control.

The Taste Can Be As Important As The Amount

Elsie, the cow, likes to eat, too—and apparently likes to enjoy what she eats.

That's why she has proved that it's not always the amount of forage she has per acre but the taste of it that counts. And legumes taste mighty good to her, according to University of Maine agronomist Cecil Brown.

In fact, legumes in mixture with grasses stimulate greater daily intake of pasture than pure grasses alone. A good case in point, Brown reports, was a Washington State College experiment in which 30 to 50% of Ladino clover mixed with orchardgrass caused 9% increase in daily milk per cow over pure orchardgrass.

"The main advantage of the Ladino pasture was its acceptance by the grazing herd, not higher acre yields," Brown explains. "In fact, the nitrogen-fertilized orchardgrass produced 15% more forage per acre than the Ladino-orchardgrass, but was inferior in daily milk production." —*The American Potash Institute*

Time To Change Your Cattle Feeding Methods?

The time of price advantages in late-summer and early fall is past. You now have more freedom to adopt profit-making practices . . .

Condensed from Illinois Research

L. H. Simerl, Professor of Agricultural Economics

IS IT TIME for some farmers to change their cattlefeeding programs? A study of recent seasonal swings in prices of fat cattle suggests that it is.

Before 1958, prices for fat cattle generally averaged higher in the late summer and fall than in the earlier months of the year. Many farmers established cattle-feeding programs to take advantage of these higher prices.

In each of the last four years, however, prices for fat cattle have averaged highest in the first half of the year. The many farmers who sold their cattle in the later months often received unprofitably low prices.

There formerly were good reasons why prices for fat cattle were higher in later summer and fall. There now seem to be some good reasons for expecting higher prices in the winter and spring.

In the earlier years ranchers kept their cattle until they were at least two, and often three years old. Corn belt farmers bought cattle in the fall and fed them grain for three to six months. Large numbers were fat and ready for market in the winter and spring. Heavy receipts tended to depress prices of the fattened cattle.

In recent years ranchers have sold increasing numbers of cattle as calves and light yearlings. Farmers buy them in the fall and carry them for several months on roughage to get low-cost gains. The grain-feeding period begins in the spring or summer. This makes large numbers of fat cattle for the late-summer and fall markets.

One other development has helped to change the seasonal pattern for prices of fat cattle. This is the leveling-out of monthly pork supplies.

Hog marketings formerly were light during the summer and early fall. This diverted consumer

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demand to beef. In recent years farmers have spread marketings of hogs more uniformly through the year. Supplies of pork are more abundant during the summer and early fall, providing relatively more competition for beef in these seasons than formerly.

We have, of course, no good reasons for expecting that prices of fat cattle will reach their highest levels in the first half of every year. But the price advantage of feeding programs leading to late-summer and fall marketings is past. Farmers now have more freedom to adopt year-round feeding programs and other cost-reducing, profit-making practices.

When and What To Do With Hogs

Ear notch pigs at 1 day; start creep feeding at 2 weeks; castrate at 4 weeks; vaccinate at 6 weeks; wean and weigh at 8 weeks; market weighing 200 to 250 pounds. Rank sows by litter weights. Cull lowest two-thirds each year. Replace with gilts from heaviest litters. Be sure each sow has 12 or more sound teats. Select herd board from weighed litters. Secure best boar from heaviest litters at 8 weeks. In final selection of herd boars, or in purchasing same consider type, size and shape.

Putting fertilizer in the tree planting holes may seem like a good idea—but it's not, according to a team of University of Wisconsin scientists. Tests show this practice can damage tree seedings, or even kill them, and can waste fertilizer.

More people in this country are killed by bees and wasps than by snake bites. In five years, stings from wasps, bees, hornets, and yellow jackets killed 86 persons, compared with 71 deaths from snake bites and 39 from spiders. Rattlesnakes are reported to be the most deadly single kind of snake, killing 55, but bees alone killed 52 persons.

New Whole Grain Wheat Wafer Developed

A whole grain wheat wafer has been developed and tested by USDA scientists as a compact, long-keeping emergency ration for stockpiling in fallout shelters. The wafers have an estimated shelf life of five years or longer. They are made from whole grain wheat that has been parboiled, dried and puffed, then crumbled and made into a wafer the size of an average cookie.

Contract Vet Service

"Pill" or profit . . . what does it offer in the way of improved animal health for less cost? . . .

Condensed from Farm and Ranch

WANT to cut that veterinary bill and get better health care for your livestock? If you do, contract veterinary service may be the best tool to use.

Contract service is not new. Many large livestock operations have used it for a long time. But even small farmers with relatively few animals are finding such service keeps animals in better shape and is more economical than "a call in the middle of the night," according to Virginia Polytechnic Institute's Dr. S. L. Kalison.

Dr. Kalison is convinced that more livestock producers are becoming aware of a need for more efficient use of veterinary service and drugs. Intensified farming and keener competition between areas and individual farmers are putting on the pressure to keep down cost and maintain product quality.

Kalison points out that as the number of animals in an area is doubled, the problem of disease is increased four-fold. Sick animals mean lower efficiency, loss of time by the owner, expensive treatment and drugs, loss in product quality and losses from death.

The major advantages of contract veterinarian service are as follows:

Farmer: ● Improved animal health, higher product quality. ● Diseases are detected before becoming a problem. ● Routine vet care encourages improved sanitation, etc. ● Cost of vet care and drugs usually drops. ● Greater profits.

Veterinarian: ● Permits better use of time (planned visits, etc.) ● Allows more complete knowledge of farm's problems, conditions, history of animals. ● Gives better chance of being effective

Reprinted by permission from Farm and Ranch, 318 Murfreesboro Road, Nashville, Tennessee

in emergencies. ● Allows greater returns for services.

Planned visits at stated intervals permit a better job of disease prevention. Dr. Kalison cites as proof one case where the average cost per call for a dairyman dropped from $12.55 in 1958, under a hit-or-miss deal, to $11.27 in two years. More significant was the drop in the cost of drugs used. In 1959, the first year contract with the local veterinarian, the cost of drugs per call was $4.47 per call. That cost in 1960 dropped to $1.55.

The total number of calls dropped from 38 in 1959 to 32 in 1960. Dr. Kalison attributes the drop in drug cost to the improved health of the herd, closer supervision, routine checks by the veterinarian.

Contract Provisions

Contract provisions depend on the type of livestock grown, the area, special problems, facilities on the farm and other factors.

A contract generally calls for the veterinarian to spend a specified amount of time on the farm performing routine checks, and jobs such as vaccinations, testing and other necessary services.

The number of animals to be cared for during a year, and the type of services desired should be the key to a contract.

Charges for this type of routine service are usually scheduled on a per-call basis. The amount of charges can be set up on the basis of past experience or estimated. Farmers and veterinarians not accustomed to contracts may need to experiment and make revisions in such details.

It is important that the veterinarian and owner and/or tenant work as a closely coordinated team. Each team member's job becomes more difficult, if not impossible, when other members fall down on their job, according to Dr. Kalison.

Dr. Kalison goes even further: "Some type of regular service, such as that available under a contract, is becoming increasingly necessary. There is no short cut to good animal health. Today's farmers who don't practice tight programs of disease prevention may soon find themselves out of business."

In increasing number and variety, animals join the search for tomorrow's cures. The attack on cancer, cardiovascular diseases, mental disorders and a wide range of other illnesses centers on the results of laboratory tests in which these creatures are indispensable. Better health is not easily won—and animals play a major role in the battle.

—Medicine At Work

TRACTOR TALK

Bob Bargert

Change Spark Plugs In Sets

"Mixed salads are fine, but mixed spark plugs may provide a serious case of tractor indigestion."

These words of caution come as a result of recent field investigations revealing that many farmers, when they encounter spark plug misfiring, frequently change only one spark plug to correct the trouble.

While this practice may temporarily restore performance, it is not recommended for the following reasons:

(1) Uneven spark plug gaps may result in rough idle.

(2) Mixing plugs may result in uneven power distribution from the cylinders.

(3) Will disrupt maintenance schedule (the farmer won't remember which plug he put in at what time).

(4) Other plugs may be "borderline" and wasting gas and power without the farmer knowing it.

(5) Low voltage requirements at the one plug (new) may rob voltage from the other plugs — especially if a carbonized path in the cap allows voltage to track from one insert to another (the new plug may get plenty of voltage while the plug next to it may get too little).

It is advised to play it safe when it comes to replacing spark plugs. Replace *all* plugs every 250 hours for maximum tractor performance.

* * *

Quick Check Will Reveal Condition of Primary and Secondary Systems

If you have a tractor in which the starter turns over but the engine won't start, and you find that there is a very weak spark or no spark at all at the spark plugs, here's a quick check you can make to determine whether the trouble is in the secondary or the primary system.

Remove the coil (center) high tension lead from the distributor cap tower, and, holding it approximately 3/16 inch from the cylinder head, observe the spark as the engine turns over.

If the spark is good, chances are the trouble is in the distributor cap, the rotor or the spark plug cables. If the spark is weak,

or there's no spark at all, the trouble probably is in the primary circuit or in the cable between the distributor cap and coil, or in the coil itself.

* * *

Condensed Facts On Condensers

A defective condenser can cause a lot of trouble in a tractor's ignition system. According to tests made by Champion Spark Plug Company, here's why:

(1) Wrong condenser capacity may cause pitted breaker points.

(2) High internal resistance may result in condenser failing to take a proper charge, causing arcing and burning of the contacts.

(3) If condenser "flashes over", the engine may miss under high compression.

(4) If internal insulation is bad, leakage can occur, causing breakdown of the condenser and complete ignition failure.

(5) An open or shorted condenser can prevent the ignition system from operating.

(6) A condenser tester offers the only means of accurately checking the condition of a condenser.

Feeding Biggest Factor Influencing Milk Production

The biggest single factor influencing the amount of milk a cow produces is the amount of feed she eats.

A. M. Meekma, extension dairy specialist at Texas A & M College, says that contrary to the belief of some, feeding, not breeding, is mainly responsible for milk production. Inheritance determines the top potential level of production, but environment determines actual production, he explains.

To support his theory, Meekma cites a study by the U. S. Department of Agriculture, in which 462 lactation records of 230 cows were studied over a seven-year period. This study showed that season of calving, days calf was carried while milking, and length of previous dry period, also influenced production.

U. S. net farm income for 1961 is predicted to be $12.6 billion. If reached, it would be the same as in 1954. Yet, in those seven years prices of U. S. farm and ranch real estate have gone up more than a third. Thus the repayment of debt incurred to buy farms and ranches at current prices is likely to continue to be difficult.

—U. S. D. A.

What You Should Know About Lepto

How to prevent it and treat it if it occurs . . .

Condensed from The Cattleman

LEPTOSPIROSIS is a bacterial disease that affects both wild and domestic animals, and also humans. Infection may sometimes originate from rodents and other wild animals.

The disease may be spread from animals to humans, or from one animal to another. Where careful sanitation is practiced, the disease is not normally spread from one human to another, or from humans to animals.

The normal incubation period of the disease ranges from seven to 21 days.

Where Leptospirosis Is Found

Leptospirosis is found in many countries of the world, including the United States. In this country, the disease has been found in every state, in every climatic zone, and during all seasons.

What Causes Leptospirosis

The disease is caused by a number of different strains of bacteria called "leptospira." At present, 56 strains of "Leptospira" are known; there may be others. Of the known strains, 10 have been isolated in the United States, and evidence suggests the presence of two more. Several strains are common to domestic animals.

Animals Affected By Leptospirosis

Cattle, swine, sheep, dogs, rats, mice, skunks, raccoons, beavers, deer, elk, wildcats, opossums, foxes, horses, and bats are known to become infected with leptospirosis. In addition, humans may also become infected with the disease.

How Leptospirosis Is Spread

Leptospirosis may be spread by:

Eating or drinking contaminated food or water. Animals may become infected if they are fed milk from cows in the early stages of the disease; or if they drink from streams or water holes draining from infected areas.

Bacteria entering the body through the skin, or through membranes of the eyes, nose, or mouth. This may be by contact with infected animals or with in-

Reprinted by permission from
The Cattleman, 410 East Weatherford Street, Fort Worth 2, Texas

fected urine. Infected cattle shed bacteria in the urine for periods of from several weeks to several months. Swine and dogs often shed for longer periods. Mice and rats may shed bacteria for a lifetime.

Detecting Infection

Many leptospirosis symptoms are also symptoms of other diseases. The only sure way to diagnose the disease is by laboratory blood test. However, suspect leptospirosis if your animals show any of the following signs:

Abortion may be the first noticeable sign of infection in your herd. It commonly occurs during the last three months of pregnancy, but it can happen any time.

Full-term calves may be born dead or weak.

Afterbirth may be retained.

Milk production may drop, or stop completely.

Milk may appear bloody, or may be yellow and thick like colostrum.

Cow's udder may appear flabby, but is not inflamed.

Urine may be bloody or discolored. Color may vary from mild pink to nearly black.

Cow may have a fever—often as high as 105 or 107 degrees.

Cow may lose its appetite or lose weight.

Membranes of the eyes, nose, or mouth may have a white, yellow, or brownish appearance.

An animal may be infected without showing any of these signs. Also, some animals that apparently have recovered from leptospirosis may still carry the disease and spread infection to other susceptible animals for varying periods of time. Severe cases may result in death.

Prevention

Isolate replacement animals you bring into the herd. Add these animals only after they have passed two successive negative blood tests at least 30 days apart.

Isolate sick or aborting animals from the rest of the herd.

Disinfect all buildings where sick or infected animals have been housed.

Make sure buildings where animals are housed are kept clean at all times.

Feed and water animals under sanitary conditions, especially if infection has been found in your herd. If you feed and water your animals as a unit, make sure mangers, racks, and tanks are cleaned often, and clean, fresh feed and water are provided. Avoid feeding animals on the ground where infected animals can contaminate feed.

Avoid watering animals in ponds or creeks. Fence off such areas where necessary.

To build immunity in your herd, vaccinate replacement animals—also healthy animals. When vaccinating your herd, keep in

mind that the degree of immunity may vary from one animal to another.

Some cattle that have been infected and have recovered may still carry the disease and spread infection to other susceptible animals for varying periods of time. For this reason, animals that have recovered from infection are seldom reinfected by the same strain of "Leptospira."

Treatment

No effective treatment for leptospirosis has been developed. Antibiotics are sometimes given infected animals. However, available evidence indicates that, while antibiotics may relieve some of the symptoms, they do not cure the disease.

If symptoms indicate you may have infection in your herd, call a veterinarian immediately so that he can have the necessary laboratory tests run to detect infected animals as soon as possible. When infected animals are found, separate them from the rest of the herd to prevent further spread of the disease to healthy animals.

What To Do

Isolate sick animals immediately.

Get in touch with your local, state, or federal veterinarian, who will test animals suspected of leptospirosis.

If the disease is found, ask your veterinarian to help you set up a plan to keep infection from spreading to healthy animals in your herd—or to your neighbor's herd.

Mastitis Prevention

Here are eight good management practices recommended to dairymen in their fight against mastitis:

1. Raise your herd replacements from good-uddered cows which are relatively free from mastitis.
2. Recognize sources of stress and strive to eliminate them.
3. Practice managed milking—scientific milking with a machine in good operating condition.
4. Provide cow comfort and good sanitation for better herd health, greater mastitis resistance.
5. Avoid mastitis in high-producing cows by more sensible feeding.
6. Handle cows gently and patiently. Cows like regular routine.
7. Remove all sources of teat and udder injury — the main cause of mastitis.
8. Manage both the dry cow and the fresh cow properly—mastitis never takes a holiday from its attack. —*Milking Shorthorn Journal*

Chimney Smoke

by Irene Rudie

Our souls are like the sparrows
Imprisoned in the clay;
Bless Him who came to give them wings,
Upon a Christmas Day!
—Elizabeth Stuart Phelps Ward

★ ★ ★

Following a custom brought with our grandparents from Austria, we always place a few wisps of hay and a handful of grain under the tablecloth when we eat our Christmas Eve supper, to insure a good harvest in the coming year.

★ ★ ★

The operator of our party-line telephone system is extra busy the first weeks of December when folks call each other for missing addresses for their Christmas cards. She even helps out sometimes by supplying an address from the city directory in her office!

★ ★ ★

One of our neighbors who lives close to the highway locked one of his gas barrels and filled the other with water. His effort to discourage thieves didn't work. He forgot to tell his son about it and the boy filled their farm tractor with water!

One herd of cows near here is having sausage in the silage this year. A little pig got in the way of the field chopper, and there he is.

★ ★ ★

Trying to get ahead with Christmas cookies when there are children in the family is like trying to go upstairs by going up one step and then sliding back two.

★ ★ ★

I cannot blaze new trails through an uninhabited wilderness, or make a path across a desert, but, oh! I can make the first tracks in freshly fallen snow.

★ ★ ★

An elderly woman gazed pityingly at two young relatives with ear cords at a family gathering. "How sad," she said, "That both of the boys in one family should be hard of hearing!" The boys were listening to a football game on their pocket radios.

Can I Afford More Machinery?

If you are thinking of buying more machinery, here are some points to consider.

Condensed from Nation's Agriculture

George A. Slappey,
Doane Agricultural Service

NARROWING farm profit margins have made it more important than ever for farmers to keep a close watch on production costs.

Efficient use and investment in farm machinery are a vital part of this job.

Operators have been rapidly replacing labor with more machines.

Both higher wage rates and the lack of available labor have added speed to mechanization of crop and livestock enterprises.

Larger farms have resulted in the need for larger equipment.

Engineering advances bring out new and better equipment every year.

Yet at the same time many farmers now figure that they have too much money tied up in machinery.

There are several questions that must be answered before you can make the best decision on the purchase of more machinery.

First, what's the specific job the equipment will be needed for. It should be a part of the total farm operation that is intended to make the highest net income.

Next, estimate how much the machine will be used.

Then, you need to work out a careful estimate of the cost of ownership and operation.

The purchase price of a tractor or other farm equipment is only one part of the total cost of ownership.

Finally, you must ask yourself if the money used for this equipment could be used elsewhere in your operation to better advantage.

Before buying, you ought also to consider the possibilities of renting or hiring the operation done. The most common method

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of keeping machinery investment down has been the use of custom work.

Another method is the purchase of equipment on a joint basis; each farmer's share of the purchase price may be proportional to the use he expects to make of the machine.

Before buying new or used machinery it is important to know just what owning more machinery will do to your farm's net income.

Sound farm management does not come from a minimum investment in machinery—it comes from measures that increase the farm's net income.

There are two ways to examine the purchase of more equipment from a management viewpoint. One method is called the partial budget. This enables you to estimate the ownership and operating cost of an additional piece of equipment and make comparisons.

For example, let's compare the total ownership and operating costs of two different sized combines. We shall assume that you are harvesting grain and that you have an 11-day season and can figure on running ten hours per day.

We can see that the total cost of owning and operating the larger combine is considerably higher per year. However, when costs are put on a per acre basis, things can look considerably different.

Whether or not you buy a specific size of equipment will depend upon the amount of use that you have for it. In considering these two combines, we must first determine the capacity of the two machines. The acres that each will cover in a ten-hour day can be determined by using the following formula:

Width of machine in feet times Speed times Field efficiency (see table 3) divided by 8.25 equals acres covered per hour.

For the seven-foot combine the acre capacity per day would be figured as follows:

7 feet times 3 mph times .65 field efficiency divided by 8.25 equals 1.65 acres per hour. 1.65 times 10 equals 16.5 acres per day.

Using the formula we find that the 12-foot combine will harvest 36 acres per day and the seven-foot, 16.5 acres per day. Thus, in our 11-day harvest season, the 12-foot machine will cover 396 acres.

Dividing annual cost by number of acres possible, we find that it costs $3.45 per acre to run the larger combine.

The seven-foot machine will harvest only 181.5 acres in the 11 days and its cost per acre is higher—$3.62 per acre. Since the fixed cost for the larger machine is high, we must have a larger

COMPARISON OF SELF-PROPELLED COMBINE AND PULL-TYPE HARVESTING GRAIN WITH 11-DAY SEASON AND RUNNING 10 HOURS PER DAY

	12-foot Self-propelled	7-foot PTO Pull-type
New Cost	$6,800.00	$2,300.00
OWNERSHIP COST:		
14% of new cost	952.00	322.00
OPERATING COST:		
Labor ($1 X 10 hrs. X 11 days)	110.00	110.00
Power or Fuel Cost (11 days X 10 hrs. X $2.75 gal./h. X 21c)	63.52	
(tractor ownership and operating at $1.34)		147.40
Oil (11 days X 1.1 gal./day X $1)	12.10	
Lubrication (new cost X .4%)	27.20	9.20
Repairs (new cost X 3%)	204.00	69.00
Total operating cost	$ 416.82	$ 335.60
Total annual cost	$1,368.82	$ 657.60

number of acres to harvest to justify owning it.

Another way to work out the potential of owning a machine is to figure the number of acres you must have in order to break even with costs of renting or hiring the operation done.

Let's assume that it's possible to custom hire combining for $4 per acre. Since operating costs are eliminated when work is hired, they must be taken out of the figuring. Here's an example of how to figure the number of acres you need in order to own a piece of machinery.

Cost of custom combining per acre $4.00

Deduct per acre cost you save by hiring work done (per acre operating cost for 12-foot combine $416.82 divided by 396) 1.05

Added cost you pay for custom work $2.95

Ownership cost $952 divided by $2.95 equals 322.7 acres you must cover each year in order to spread your fixed cost thin enough to equal added cost you pay for custom work.

In order for you to profit from ownership instead of hiring the work done you would need to harvest over 323 acres. However, these figures do not take into account the convenience of getting the work done when you need it. Also it assumes the same amount

of efficiency would be used in harvesting.

There are two general classifications into which machinery costs may be divided:

A—Cost of ownership
1. Depreciation
2. Interest and investment
3. Taxes and insurance
4. Housing

B—Cost of operating
1. Fuel or power costs
2. Repairs
3. Lubrication and oil
4. Labor for operating

The cost of ownership is what

TABLE 1 — TOTAL ANNUAL COST OF OWNERSHIP IN PERCENTAGE OF ORIGINAL COST FOR VARIOUS FARM MACHINES

Machine	Expected Life in Years	Annual Cost Of Ownership in Percentage Of Original Cost
Blower, ensilage	12	12.5
Combine, power take-off	10	14.0
Combine, self-propelled	10	14.0
Corn picker, tractor mounted	10	14.0
Cultivator, duckfoot	18	10.0
Cultivator, shovel, tractor mounted	16	10.6
Feed grinder, burr	16	10.6
Feed grinder, hammer mill	12	12.5
Field forage harvester, row crop attachment, p.t.o driven	10	14.0
Field forage harvester, row crop attachment, engine driven	10	14.0
Grain drill	18	10.0
Hay baler, pick-up, automatic	10	14.0
Hay rake, side delivery	16	10.6
Harrow, disk, tandem	16	10.6
Harrow, drag	20	9.5
Lister, trail behind with planting attachment	16	10.6
Lister, mounted with planting attachment	18	10.0
Manure spreader	18	10.0
Mower, tractor	18	10.0
Planter, trail behind, drill	20	9.5
Planter, tractor mounted, drill	20	9.5
Plow, one-way	14	11.4
Plow, trail behind, moldboard, 2 14"	16	10.6
Plow, tractor mounted, 2 14"	16	10.6
Sprayer, field, tractor mounted	10	14.0
Sprayer, field, trailer mounted	10	14.0
Tractor wheel	10	14.0
Trailer, rubber tire	14	11.4

economists call the annual fixed cost. These costs are going to be the same each year whether you use the machine or not. However, the cost per bushel or cost per acre will vary considerably with the amount of use—the more the machine is used, the lower the cost per acre.

Figuring the annual depreciation for farm machinery can result in a conflict between the rate used for tax purposes and the rate that truly represents the annual usage of the equipment. Generally for budgeting purposes, it's best to use the ten-year straight-line method—simply divide the new cost by ten to get the annual depreciation.

If the machinery is to be bought with borrowed money, interest is a very real expense and should be included. However, it should be considered regardless of how the equipment is purchased. The money tied up in equipment could be earning returns elsewhere. Figure interest at the current rate, times one-half the cost of the machine.

TABLE 2 — SUGGESTED VALUES TO USE IN CALCULATING ANNUAL REPAIR COSTS FOR VARIOUS FARM MACHINES

Machine	Annual Repairs In Percentage Of First Cost Of Machine
Baler, hay with engine	3.0
Blower, forage	2.5
Combine, engine-driven	3.0
Combine, self-propelled	3.0
Combine, power take-off	3.0
Cultivator, duckfoot	3.5
Cultivator, listed corn	3.5
Cultivator, shovel	3.5
Drill, grain	1.5
Field forage harvester	4.0
Grinder, feed, burr	3.0
Grinder, feed, hammer	2.0
Harrow, disk	3.0
Harrow, drag	1.0
Lister	5.0
Mower	3.5
Picker, corn	3.0
Planter, corn	2.0
Plow, one-way	5.0
Plow, moldboard	7.0
Plow, tractor mounted	7.0
Sprayer, field	5.0
Spreader, manure	1.5
Rake, hay, side-delivery	2.0
Tractor	3.5
Truck	5.0
Wagon	1.5
Weeder, rod	2.0

Taxes will vary considerably with areas but, for budgeting purposes, 1% of the purchase price will be accurate enough. Insurance is often not carried on equipment, but it should be figured as a risk cost anyway. For budget purposes use 0.5% of the purchase price.

Trouble is like a sieve, through which we rub our acquaintances. The big ones, who won't go through, we call friends.

Many operators don't plan to house equipment. The value of housing has been much debated, but studies show that housed equipment will last about 10% longer and have 10% less repair costs than unprotected equipment. Housing should be figured in at about 1.4% of the purchase price of the equipment.

It's best to use your own experience and adjust these figures to fit your situation, but sometimes these figures are hard to estimate. Table 1 shows a quick way for you to estimate total annual fixed costs for several types of equipment.

Operating costs or variable costs are the out-of-pocket costs that you incur as the machinery is used. The more the equipment is used, the higher the operating costs go. Fuel for power may come either from a mounted engine, tractor or both. This cost is obtained by multiplying the cost of the fuel or power by the amount used per hour.

TABLE 3 — ESTIMATED RANGE OF FIELD EFFICIENCY AND SPEED OF FIELD MACHINES

	Range in field efficiency a* (per cent)	Speed (miles per hr.)
Plow	75-85	3-5
Disk	79-89	3-5
Harrow (spike-tooth)	67-77	5-8
Cultivator	75-85	3-5
Rotary hoe	75-85	4-8
Corn planter	62-77	3-5
Grain drill	61-81	3-5
Combine	60-70	2-4
Corn picker	60-70	2-4
Mower	74-84	3-5
Rake	70-90	4-5
Baler	70-80	2-5
Forage harvester	55-70	2-4..
Sprayer	55-65	3-6

a* Field efficiency is the per cent of theoretical field work accomplished after deducting for losses resulting from turning at the ends, stopping for lubrication, adjustments, breakage, and refilling seeding, spraying, or fertilizer equipment.

Fuel consumption estimates for different operations can be obtained from your local machinery dealer.

Engine oil consumption will range between 1/10 and ¼ quart per hour, including changes, for most farm engines. Repair costs

for various equipment are shown as a percentage of new cost in table 2.

Other lubrication and greasing costs will equal .2% to 1% of the purchase price during a season. This includes labor costs, which may run up to 10% of operating time for machines such as the combine which are used for only short periods of time. An average annual lubrication charge for most field machinery is .4% of its new cost.

Research Report On Shipping Fever

The discovery of para-influenza 3 may be another step in solving the mystery of what causes shipping fever. Dr. George Woods, University of Illinois veterinarian, recently reported that para-influenza 3 is a virus that has been isolated from cattle with shipping fever. This virus is similar to a virus isolated from children with respiratory disease, Dr. Woods said. However, scientists are not sure whether infected cattle can infect people, or vice versa.

Antibodies provide a built-in resistance to disease. Cows that have been infected with shipping fever pass antibodies on to their calves via the colostrum, the cow's first milk. These antibodies persist for several months in some calves. Antibodies are also produced through vaccines. Dr. Woods said, "Calves vaccinated a few days before weaning have shown antibodies that persist during the critical period of exposure and stress following weaning and shipment."

—Better Farming Methods

Study Gastric Ulcers In Swine

Two Purdue University veterinarians are studying gastric ulcers in swine under a $45,000 three-year research grant from the National Institute of Health.

Drs. G. D. Goetsch and T. M. Curtin are investigating the cause, development and effect of ulcers in hogs. A recent increase in the seriousness of stomach ulcers in hogs is causing swine raisers concern and is of interest to investigators of this condition in man.

Results of the study are expected to provide direct benefits to the swine industry and may furnish new ideas for treatment and prevention of stomach ulcers in human beings. The pig also may be proved to be of great value in future comparative studies in the field of physiology. *—Indiana Extension*

Mineral Balance Is Essential In Livestock Rations

Some 13 mineral elements are necessary to animal health . . .

Condensed from
American Livestock Journal

FEEDING mineral mixtures to livestock on pastures can pay big dividends in more rapid weight gains, greater milk production, and breeding efficiency.

But it is necessary to be very careful to keep the mineral mixture in balance. Shotgun mixtures fed without regard to need can upset the mineral balance in the ration and the forage consumed by the livestock and do more harm than good.

The importance of keeping minerals, as well as other feed nutrients, in proper balance with one another is shown by the results of a number of studies conducted in Louisiana and other states.

These studies show also that it is not enough merely to correct mineral deficiencies after they have produced gross abnormalities in livestock. Damage to fast gains and high production may occur long before the visible symptoms are seen. These findings apply to sheep as well as beef and dairy cattle.

Some 13 mineral elements have been shown to be essential to animal health. Our native range grasses appear, from chemical analysis, to furnish adequate amounts of all of these except salt and phosphorus. However, protein may be short during the summer or early fall, and therefore for maximum performance supplemental feeding of 1 or 2 pounds of 32% protein supplement per cow per day, or ¼ pound per sheep per day, during late summer and the early fall season would increase production and insure greater utilization of available forages. Intake of protein supplements has been successfully controlled at desired levels by mixing 1 part salt with 2 to 3 parts protein supplements, self-fed.

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Calcium-Phosphorus Ratios

Most forages contain an abundance of calcium throughout the growing season. However, phosphorus and protein content decrease, while calcium to phosphorous ratios increase with plant maturity and as the growing season advances. This results in grasses—and subsequently sheep and cattle rations—that have a wide ratio of calcium to phosphorus.

These factors create a major problem for the farm feeding range grasses, as shown by the calculated average calcium to phosphorous ratios in native grasses and the available mineral supply.

Samples	Ca/P Ratio
Native Grass:	
Early Leaf	3:1
Full Leaf	6:1
Mature	11:1
Bone Meal	2.1:1
2:1 Mix Bone Meal-Salt	2.1:1
2:1:2 Mix Bone Meal-Salt and Oyster Shell Flour	4.8:1
38 Commercial Mineral Mixes Sold in La. (1957-59)	3.3:1 (1.4-8.2 range)

As they mature, range grasses manage somehow to hold on to their calcium better than their phosphorus, resulting in the observed increased ratio of calcium to phosphorus. The usual practice of supplementing this ration with a mineral mixture containing oyster shell flour or limestone would do little to improve the Ca/P ratio. But bone meal or a bone meal-salt mixture would narrow the ratio and improve the ration greatly for animals grazing mature pasture grasses.

1:1 Ratio Desirable

Numerous experiments indicate equal parts of calcium to phosphorus, or a ratio of 1:1, to be desirable for best performance by our livestock. This has been clearly shown by the following results from the Nebraska Station:

Ca/P Ratio	1:1	4:1	9:1	14:1
Gain, lb./day	1.33	1.30	1.13	1.10

Both average daily gains and feed efficiency decreased as calcium in the ration was increased above requirements, indicating a critical Ca/P ratio to be somewhere between 4 and 9 parts calcium to 1 part phosphorus. Studies at the New Hampshire Station confirmed these data. In addition, they showed that when 2 per cent limestone was added to the ration, phosphorus absorption was decreased and both protein and energy utilization were greatly reduced. However, when phosphorus was added with the extra calcium, as a 2 per cent dicalciumphorphate supplement, body weight gains were not materially affected.

Tests in Montana with cattle have indicated that three times the amount of feed was required

to produce 100 pounds gain when calcium relative to phosphorus was high. These studies clearly indicated that when dietary phosphorus was low, added calcium not only reduced phosphorus availability, but also decreased plasma carotene proportional to calcium intake. This indicates an adverse effect upon the utilization of another seasonally critical nutrient in most grasses.

These data, and results at Louisiana station, raise the question as to whether typical sheep and cattle rations, containing sufficient forages of good quality, ever need calcium supplementation.

Excess Calcium Harmful

California workers have demonstrated that feeding excess calcium to mature animals toward the end of lactation and during the dry period may actually put the cow's calcium-regulating unit (parathyroid glands) "to sleep," resulting in low blood calcium levels and a high incidence of milk fever following calving. By increasing phosphorous levels in the rations and decreasing calcium intake to normal within 6-8 weeks prior to calving, cases of milk fever among cows with past histories of milk fever were reduced.

Therefore, good commercial mineral mixes, like good home-mixed products, should supply the specific minerals that are deficient, and only in quantities necessary to balance this deficiency. Excesses may be costly and can be dangerous.

There have been no real indications of a deficiency of any of the minor or trace elements on Louisiana pastures or most other states. At present there is no experimental evidence that their addition to ruminant rations or to mineral mixes is a beneficial or economical practice. Therefore, a mineral mixture of 1 part salt and 2 parts bone meal or calcium phosphate fed free-choice should adequately meet the greater needs of most grazing animals.

Beef Cattle Feeding Rules

Beef cattle feeding involves two major considerations, maintenance and production. The maintenance requirements, which must be met adequately before production can be obtained efficiently, may be simplified into making available to the animal in the proper proportion and amounts the following basic nutrients: fiber, protein, minerals, vitamins, and water.

Tranquilizers For Dairy Cattle

Fed at low levels, they do not appear effective . . .

Condensed from
South Dakota Farm and Home Research

H. H. Voelker and *M. Fitzgerald*

SEVERAL reports on the use of tranquilizers in clinical and laboratory investigations have indicated that one of the side effects was an increase in milk production of the treated animals.

The few trials that have involved dairy cows, however, have shown little or no increase in milk or butterfat production. Because so little is known about tranquilizer effects, further research seemed desirable.

Three group trials were conducted with dairy animals at the South Dakota State College to further check the effects of tranquilizers. The first two involved milking cows, while the third concerned dairy calves. At low levels, the Tranquilizer fed to the cows showed no significant change in milk or butterfat production, while calves that received injections gained faster than controls.

Feed Hydroxyzine

In the first trial, nine cows were fed 8 milligrams of hydroxyzine (Tran Q) daily on their grain rations. Nine other cows were not fed this tranquilizer and served as controls. The trial lasted 74 days. Daily milk production records were kept, and samples were taken once each month for butterfat and total milk solids analyses. A preliminary control period was used to determine pretranquilizer levels of production for comparison with production after tranquilizer feeding.

There was not a significant difference due to the tranquilizer when the pretreatment January production was compared to the treatment group or controls in February and March. Butterfat

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South Dakota Farm and Home Research, South Dakota State College, Brookings, S. D.

percent did not appear to be influenced by the hydroxyzine.

Milk production per cow did not change when hydroxyzine feeding was started. During the times the cows were fed this tranquilzer, they gained an average of 22 pounds body weight each. The control cows gained 21 pounds each—not a significant difference. There was no evidence of sedation in the cows fed this level of hydroxyzine.

Check Heartbeat

Six Guernseys and nine Holsteins were divided into three groups for trial 2. During a preliminary period in January 1959 the cows were weighed, milk production was recorded, and heartbeat and respiration rates were checked. On February 1, each of five cows was fed 16 milligrams of hydroxyzine daily, five others 32 milligrams, and the other five served as controls, getting no tranquilizer. Production before and after feeding tranquilizer was analyzed, in addition to use of controls, to determine if there was any influence on the milk production. The tranquilizer was fed 74 days.

Dairy cattle should have a dry period of at least 60 days before they are ready to calve again. There will be a loss in production for every day the dry period is shortened under that.

The cows were fed a concentrate mixture of one-half corn and one-half oats. The concentrate was fed at 1 pounds per 3 pounds milk produced. Corn silage and alfalfa hay were fed free choice. Milk production data were recorded at each milking, and the milk was tested for butterfat and total milk solids.

It did not appear that there were any marked differences in production for cows fed 16 or 32 milligrams of hydroxyzine. Daily milk weights showed no trends to indicate an influence when the tranquilizer was added or removed from the ration. Butterfat did not appear to be influenced either.

Heartbeat and respiration rates were checked before the cows went on tranquilizer, during the trial, and at the end of the trial. The oral administration did not appear to influence either heartbeat or respiration rates.

Increase Tranquilizer Level

One Brown Swiss cow was used to determine effects of increasing oral levels of hydroxyzine. Levels were doubled until one-half gram was fed daily. This cow appeared normal—heartbeat and respiration rates appeared normal and milk production was not affected.

Two other cows were injected

intramuscularly with 1.5 milligrams of tetrahydrozoline (PV-1) per pound of body weight. Heartbeat rates were cut from 65 per minute to 45 and remained low more than 2 hours. The heartbeat also appeared weaker.

Milk production dropped 5.6 pounds per cow daily for 2 days following the injection. Hay and silage consumption was reduced.

Calves Show Response

Sixteen dairy calves averaging about four and one-half months of age were used to test the effects of injections of tetrahydrozoline. They were weighed and fed for a 1-week preliminary period, then they were again weighed and heartbeat and respiration rates were checked.

Vaccination alone should not be depended on to prevent hog cholera. Dr. C. M. Patterson, Texas A & M College veterinarian, says that a prevention and control program should go hand in hand with a good, sound vaccination program.

Four calves served as controls, six were injected intramuscularly with .04 milligram of active tetrahydrozoline per pound of active body weight, and six others received twice this level. Heartbeat and respiration rates were checked at 30 minutes and 4, 5, 6, and 7 hours after the tranquilizer was injected. After about a half hour, the horns were removed from most of the calves (the rest were controls).

Both levels of the tranquilizer made the calves comatose within about 15 minutes. Most of these calves laid down and appeared to pay little attention when the stethoscope was used. Respiration rates dropped from 35 to 21 per minute a half hour after the injection. They remained this low 7 hours after administration of the tranquilizer.

Heartbeat rates dropped from 83 per minute to 52 in 30 minutes and gradually returned to 72 per minute in 7 hours. Both levels of the tetrahydrozoline appeared about equal in reducing heart and respiration rates.

Calves that received the tranquilizer at the .04 milligram per pound of body weight level consumed 2.86 pounds of feed per pound of gain. Those at .08 milligram required 3.86 pounds of feed per pound of gain. The controls consumed 4.25 pounds of feed per pound of gain. The 12 treated calves gained an average of 34 pounds compared with 25 for the controls.

There was some difficulty in getting the bleeding stopped in the calves that were dehorned. This specific tranquilizer appeared to be vasodilatory, so that if

the blood vessels are less constricted, it may be harder to stop the bleeding. However, other workers have observed that with beef cattle, animals in feed lot are more quiet after dehorning and therefore bleeding stops quicker. It seems, however, that on the basis of the limited studies to date, tranquilizers are not necessary for minor operations and may even be harmful.

A Disease Stamped Out

The U.S. Department of Agriculture reports success in stamping out a disease that once threatened the profits of swine growers throughout the country. Vesicular exanthema is no more. That fact furnishes gratifying evidence of what can be accomplished through whole-hearted cooperation among all those interested in the welfare of an industry.

Vesicular exanthema became a threat in 1952, as swine growers among our readers may remember, when it began spreading from California where it had been confined for more than 20 years. In a year, it had spread to 43 States.

Cooperative efforts at control were begun by USDA and the 48 States. Measures used included inspection, quarantine, prompt disposal of infected and exposed swine, thorough disinfection of all contaminated areas, and a law forbidding the feeding of raw garbage to swine, a step that revolutionized the swine feeding business in some parts of the country. Cooking of garbage has paid dividends also in better control of several other diseases.

Some observers express the opinion that the disease not only has been stamped out of the United States, where no cases have been reported for three years, but does not now exist anywhere in the world. Study of the virus will continue in laboratories, in event the disease ever should give new trouble. If it really has been stamped out completely, it is one of the first diseases of animals or humans ever to be actually, finally eradicated.

The eradication program has paid big dividends. The way to success has been pointed for those in charge of campaigns against other expensive livestock disease in the United States.

—West Virginia University

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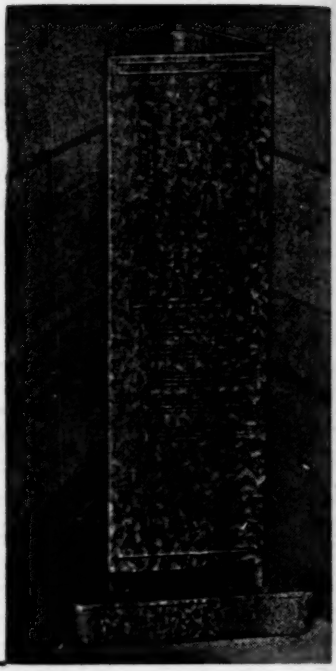

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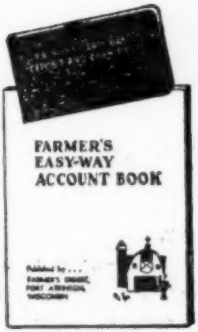

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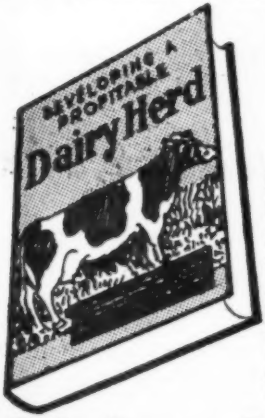

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